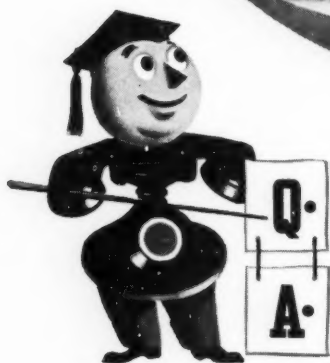
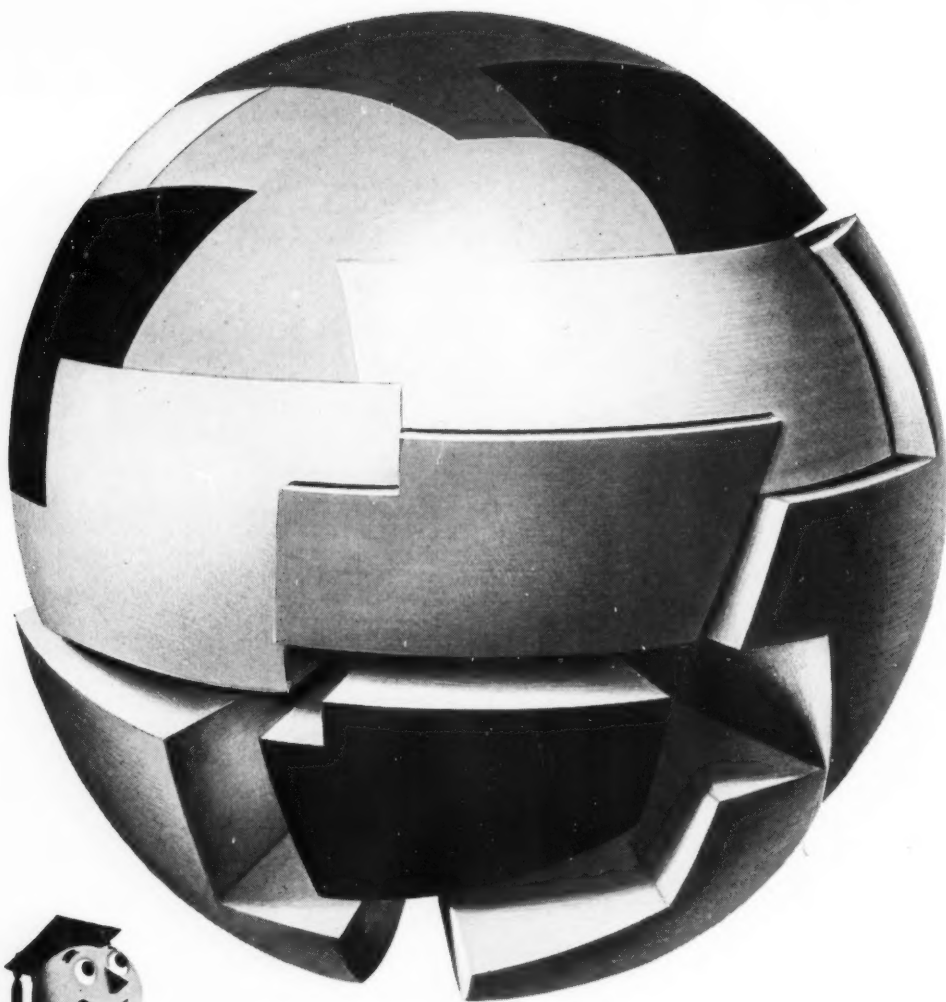


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# AMERICAN FORESTS

VOLUME 51

JANUARY, 1945

NUMBER 1

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### THE COVER

Snowshoeing Through Illinois' Woods  
Photograph by Louis C. Williams

## American Forests

Published monthly by

THE  
AMERICAN FORESTRY  
ASSOCIATION

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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

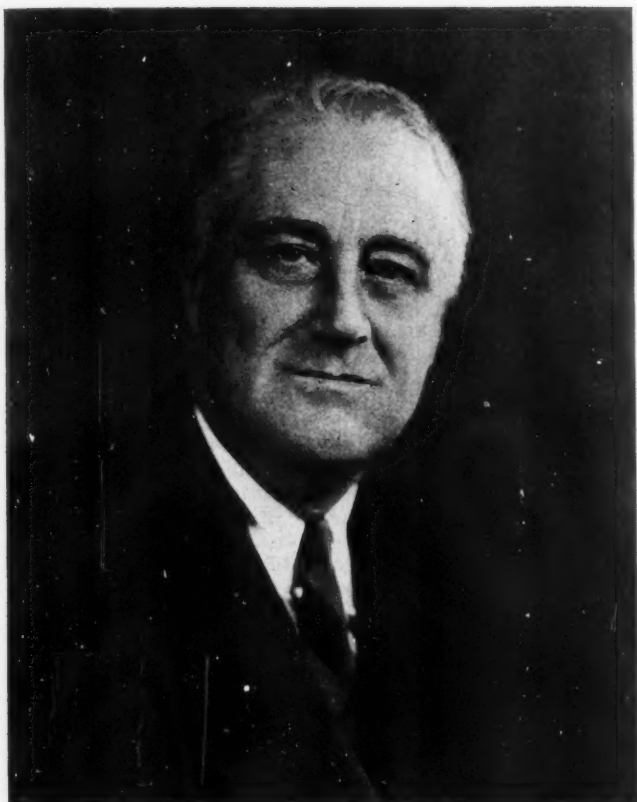
In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

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## *My Favorite Tree*

FRANKLIN D. ROOSEVELT

President of the United States

AS A TREE GROWER, President Franklin D. Roosevelt might be expected to think highly of many species—and he does. But like everyone with a deep regard for trees, he has a favorite. It is the tuliptree, often called yellow poplar. According to Professor Nelson C. Brown of the New York State College of Forestry, who has been adviser to the President on his forestry operations at Hyde Park, Mr. Roosevelt began planting tuliptrees singly, in groves, and in plantations when he was a New York state senator. Today, he has many fine specimens, some forty feet or more high.

But one tree in particular holds his affection. It is an ancient tuliptree, three and a half feet in diameter. "From one of the windows of his stately Hyde Park mansion," said Professor Brown, "the President can look out on this grand old patriarch—the largest tree on his Hudson River estate. He has definitely indicated to me that the tuliptree, and this old giant in particular, is his favorite." The President's affection for this species is undoubtedly influenced by its great beauty—and also because the ancient giant at Hyde Park has literally looked down on generations of Roosevelts.

Mr. Roosevelt began planting trees as early as 1912, both in his arboretum and in plantations throughout his 1500-acre estate—often as many as 30,000 a year. He is intensely proud of his young forests, and one of his greatest joys is to show them, as well as his well-managed natural woodland, to his official and personal friends—from Prime Minister Winston Churchill to neighboring farmers. He especially prizes his Christmas tree plantations of Douglas-fir, balsam fir, and other species.

He has high regard for white pine, red oak and Norway spruce, and is growing these species at Hyde Park by the thousands. He also has introduced Colorado blue spruce, Engelmann spruce, ponderosa pine, European larch and some of the western firs. But of them all, the tuliptree, the largest and most beautiful hardwood of the eastern forests, has his greatest affection. It is, definitely, his favorite tree.



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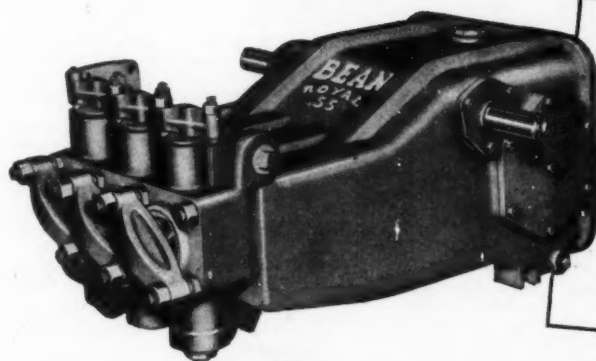
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# THE FOREST EXCHANGE . . .

## On Park Service Budgets

SIR: I have just read the editorial "Postwar Conservation Budgets" in the October issue of AMERICAN FORESTS, which was based upon a Department of the Interior statement upon postwar conservation, a part of which was published in that issue.

Because the proposals of the National Park Service are, as we view it, extremely modest, I would like to comment upon that part of your editorial which deals with our estimates.

As you know, the National Park Service is not a construction agency. Our prime concern is the preservation of great natural and historic areas in as natural a condition as possible. Our construction programs are aimed only at providing those facilities essential to proper administration, protection, and maintenance, and in providing for reasonable public access and usage. To meet these objectives is incumbent upon us under the Act of Congress which es-

tablished the National Park Service. Because of our trusteeship of many of the nation's superlative areas, we have never sought to "make" construction and development projects merely for the sake of providing outlets for employment, or to get "our share" of any type of public works funds. Neither do we seek to "attract" tourists. In fact, we have had to adopt measures to avoid being swamped by too many visitors at any one time, so as to avoid the impact upon perishable features of the parks which would defeat the objectives of Congress when it instructed the Service to "make them available" to "future generations." An example is the placing of a limit on the camping season in crowded areas. Were we interested merely in attracting tourists, we could do so by encouraging commercial and competitive types of sports and amusements in park areas, by opening more areas in winter, and by the permitting of mechanized aids to both summer and winter sports. In all such

matters our motto is: "Restraint."

The \$21,500,000 appropriation which the National Park Service could soundly expend annually for at least a decade is composed of the following types of work: Roads and trails improvements, \$7,500,000; continuation of parkways construction, \$10,000,000; and construction of buildings, utility systems, communications, \$4,000,000. This totals \$21,500,000.

The item of \$7,500,000 per year for roads and trails would merely take up this work again at our normal prewar rate, as would the \$10,000,000 item for parkways. (The Blue Ridge, Natchez Trace, and George Washington Memorial Parkways were all authorized by Congress. They are less than fifty percent complete.) We asked no increase to compensate for higher present-day costs, to catch up on the lag (already four years) occasioned by the war, or to meet the larger number of areas we now

(Turn to page 46)

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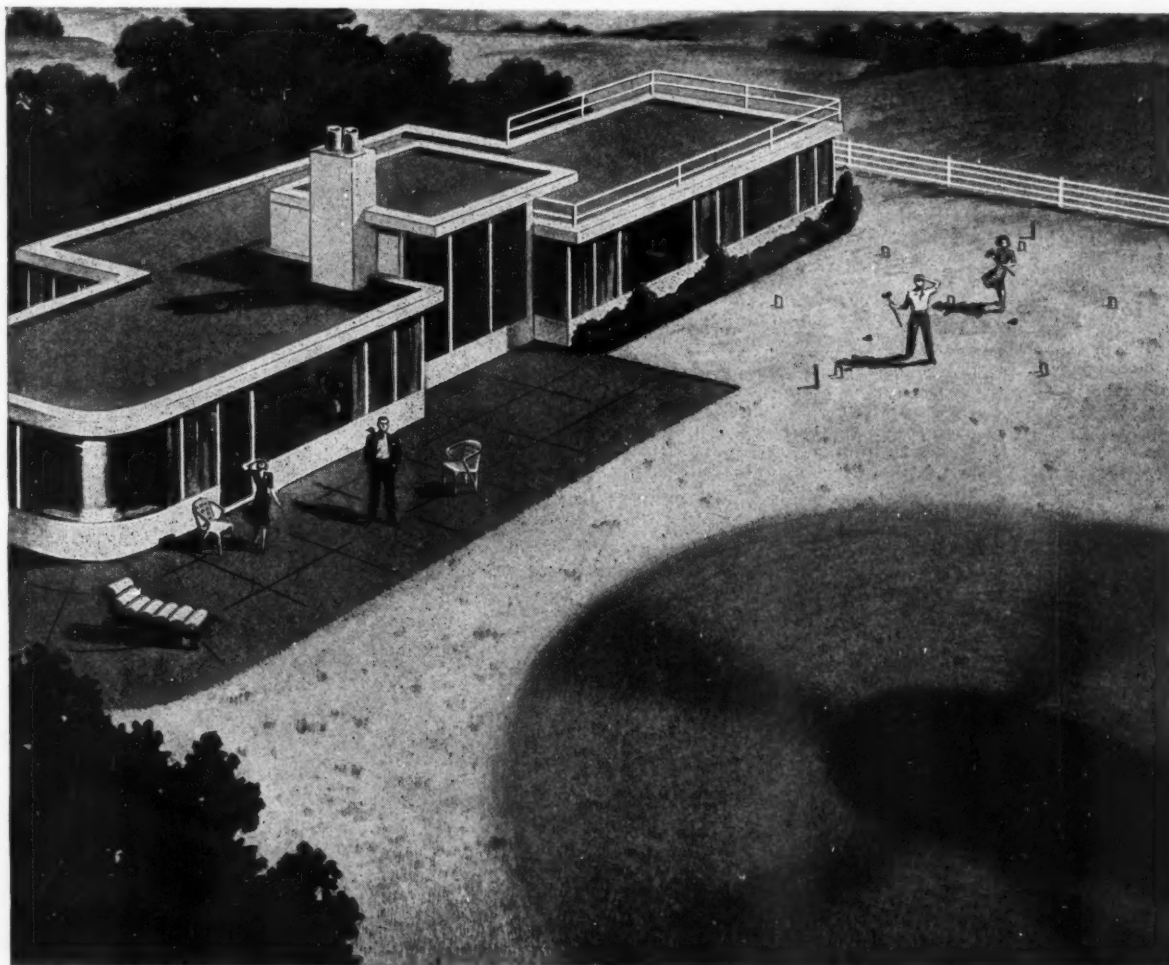
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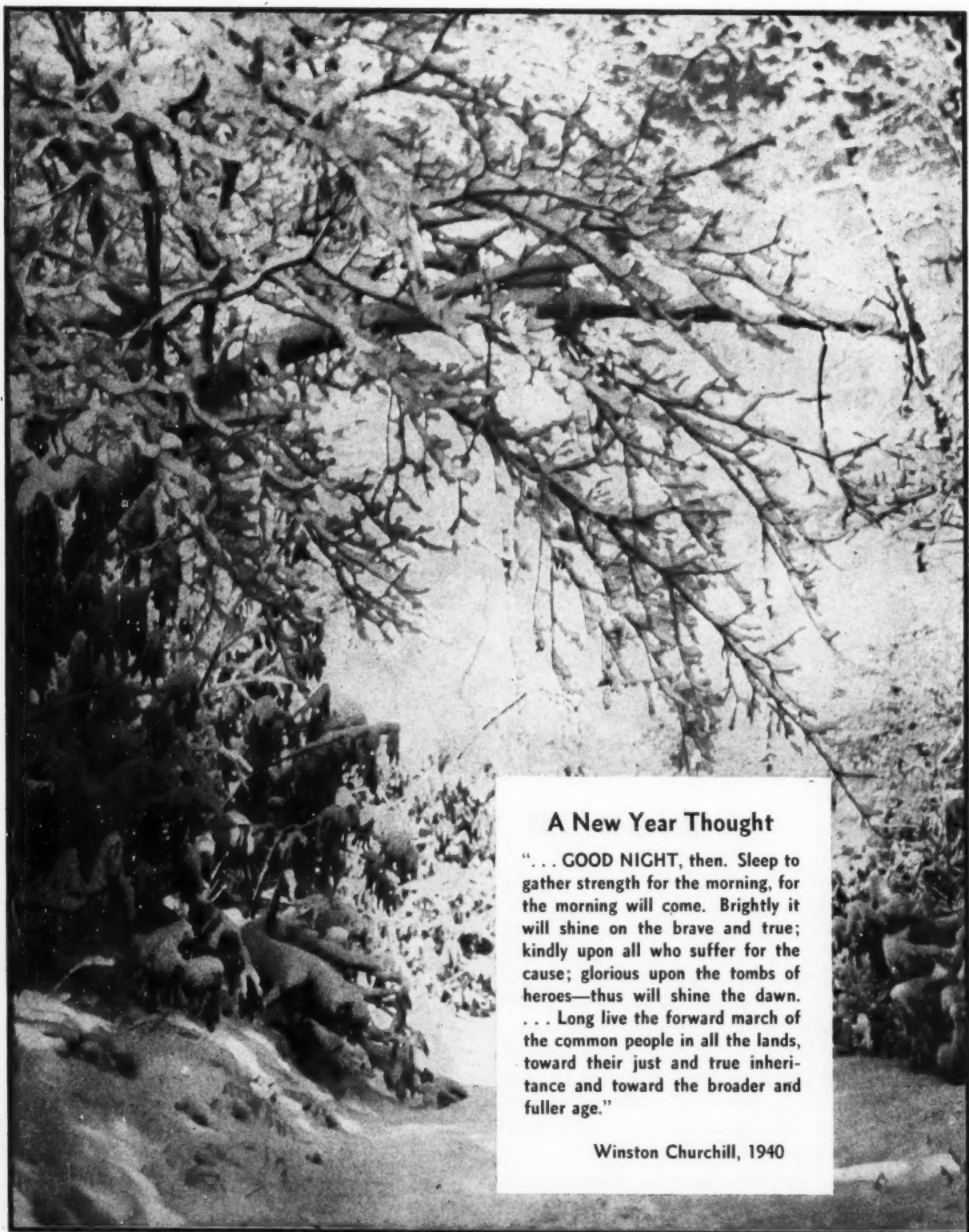
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### A New Year Thought

"... GOOD NIGHT, then. Sleep to gather strength for the morning, for the morning will come. Brightly it will shine on the brave and true; kindly upon all who suffer for the cause; glorious upon the tombs of heroes—thus will shine the dawn. . . . Long live the forward march of the common people in all the lands, toward their just and true inheritance and toward the broader and fuller age."

Winston Churchill, 1940

# Editorial

## NO CAUSE FOR OPTIMISM

SOMETIME during the fateful eighteen months ahead, the final agonies of total war will in all likelihood be wrung from a shocked and bleeding world. But long before the last cargoes of death and destruction are showered upon Berlin and Tokyo, the frightful tempo of climactic battle should jar loose any false optimism that might remain in the minds of the American people as to the cost of victory in terms of resources—particularly their forest resources.

As things stand now, no one knows what that price will be. No one will say that it matters so long as we achieve our kind of peace with a minimum loss of life. But any foolish optimism as to the seriousness of the wounds our timberlands will suffer—are now suffering—is at odds with evidence piling up in every quarter. General Eisenhower's recent admonition to the home front to increase and speed up the flow of arms and ammunition to his fighting legions should be warning enough. For wood, already at the top of the critical list, must box and package these essentials of warfare.

There is no hint of optimism in the November announcement by the War Production Board that the estimated supply of western white pine lumber is but slightly over one-half the requirements for the first quarter of 1945. This does not mean that our stands of white, ponderosa and sugar pines are depleted; it means instead that war's demand for wood is forging ahead of our capacity to produce and that lumber stocks with which we entered the war are practically exhausted. A parallel situation exists in pulpwood production. Despite the fact that the domestic pulpwood harvest for the first ten months of 1944 was up eighteen percent, greatly increased quantities of wood must be cut in 1945.

During the three war years — 1942 through 1944 — this country and her allies consumed 117 billion board feet of American lumber, or sixty percent more than we used during the three-year prewar period from 1936. Of this

amount, 82 billion feet were for direct and indirect military use, 35 billion for essential civilian use. Pulpwood consumption jumped from 11 million cords in 1939 to around 16 million yearly since 1941—and this with imports cut off from Scandinavia. Veneer logs, poles and many other items add to this commodity drain which, it is estimated by the U. S. Forest Service, will reach 49 billion board feet in 1945, exclusive of losses from fire, insects and disease. The annual growth rate, when last estimated by the Forest Survey in 1936, was but 32 billion feet.

There is no more cause for optimism in these figures than there is in the sight of cargoes of high grade redwood being shipped to build corduroy roads on the island fronts of the South Pacific. Nor can one be indifferent to the plight of our vanishing Sitka spruce stands, in such demand during the early war years for aircraft construction that only by extreme good fortune were the small show-window stands in the Olympic National Park by-passed. Our limited stands of Port Orford cedar have been severely cut, and future aircraft requirements will place a heavy drain on Noble fir and western hemlock. That high quality hardwoods are becoming scarce is evidenced by the increasingly larger proportions of low grade lumber hardwood mills are producing. Our birch forests, drafted for their tough veneer wood, may already have paid a valiant price. Who knows? The same may be true of black walnut which has been used for millions of gunstocks for the Allied cause.

We can, at the moment, only speculate on how ravenous postwar demands on our forests will be. We know the job of rehabilitation and reconstruction in the devastated areas of Europe and Asia cannot be accomplished without great quantities of wood. We know that pent-up demands arising from suspended construction activities in many countries which escaped war destruction, including our own, will be great.

It is unreasonable to suppose that Europe, after five years of war, can rebuild entire cities, towns, villages and industrial plants, can repair and refurbish millions of damaged homes and commercial buildings from resources already badly depleted. The forests of France have been overcut, in some areas denuded; Belgium and the Netherlands have watched their limited timberlands despoiled; Italy is practically without timber; and England has had to cut so deeply into her forest wealth that she is now forced to harvest many of her old and historic shade trees.

According to the best information available, Germany's forests, under Hitler, have been overcut. Yugoslavia, Poland, Finland, Roumania, Czechoslovakia and Austria, all prewar wood exporting countries, may find it difficult to meet even their own postwar needs. The same may be said about Russia. Across the Pacific, China will require all the lumber she can get.

All of this adds up to one prospect: the major burden of supplying reconstruction lumber to the liberated war-torn nations of the world may fall upon this country. To say we can meet this emergency without excessively draining our forest resource is pure speculation. We do not as yet know what effect the war is having upon our timberlands—what their condition will be when the problems of actual reconstruction are before us. And unfounded optimism is a poor substitute for facts.

There is certainly no disposition on the part of the American people not to give every aid possible to the war-stricken nations. But their own security demands that the extent of their generosity be carefully measured by how well their own resource cupboard is stocked. Such an appraisal is now being made by The American Forestry Association (see page 18). It is designed to provide a basis for making the peace, where forest resources are concerned, a realistic and lasting one.





# AUSTRALIA'S TIMBER WAR

## A Five-Year Struggle for Greater Timber Production and Fire Protection Has Put Forestry in High Gear "Down Under"

By GEORGE M. HENDERSON

HAVE YOU ever watched a 300-foot gum tree crash to earth? Seen it topped by a nimble high climber, then watched a pair of fallers, sure-footed on their springboards as tight-rope walkers, alternate between long- and short-handed axes to notch out a planer-smooth undercut? Finally seen the shiny saw eat through six feet of hardwood and then give way to the wedge and sledge that tip the gleaming white barked giant off its stump?

Probably not, unless you've been to the logging camps of southeastern Australia, for down in that corner of the kangaroo continent is the only place in the world where hardwoods grow to 300 feet. Those big gum trees, a variety called mountain ash and technically named *eucalyptus regnans*, are falling like tenpins these days. The various eucalypts provide Australia with a greater part of her timber supply, and since the war there has had to be a vastly increased production to replace softwood imports from America and to meet stepped-up overall demand.

I come from the Douglasfir country of Oregon, out around Mount Hood, and if it hadn't been for this war I don't believe I ever would have wanted to get very far from the Cascade Range. But the war came along and they needed young fellows to handle rigging on the new liberty ships Henry Kaiser was building down in Portland, so I took military furlough from my job on the Mount Hood National Forest and began learning how much of the old globe was wasted in oceans when a lot of it could better be growing timber.

That's how I happened to land down in Australia last September, just as the snow was leaving the high country and slashing fires were starting to sneak into the green timber whenever they thought nobody was looking. There was wood smoke mixed with the salt air as our ship slipped out of the Tasman Sea and nosed up Port Phillip Bay into the Melbourne docks. A March-like wind was whipping through the stays and out beyond the city you could see the foothills of the great "Dividing Range" ris-

ing into the tumbling fastness of Australian bush. It was a welcome sight after the dark jungles of Central Pacific Islands and barren coasts of northern Chile that we'd been used to since leaving Oregon.

During the weeks that the ship was in Melbourne I managed to spend a good deal of time in the bush, riding logging

trucks, staying at little inns in picturesque mountain towns, and looking over forest reserves and pine plantations with the State Forest Service men. It soon became apparent that I had arrived at the climax of a five-year struggle for wartime production and fire suppression that had amounted to a little industrial revolution in Australian forestry and



Mainstay of Australia's timber production is the giant mountain ash, a variety of eucalyptus



To harvest the timber needed for war, Australia is releasing lumberjacks from the armed services, freeing others to their jobs

milling. Although the State of Victoria is just one of seven pretty much sovereign political divisions that make up the commonwealth, it produced more timber last year than any other state and was responsible for one-fourth of the national production, so the picture of wartime forestry there is pretty representative of the country's timbered areas.

The Aussies hadn't much choice when war struck in the Pacific in 1941. The enemy had grabbed New Guinea in a few weeks and was perched across Torres Strait only ninety-five miles from their northern shores. American merchant ships were playing hide-and-seek with the Japanese navy to bring in even a small percentage of prewar imports, and home production simply had to be skyrocketed or the war would be lost.

Two years of war against Germany had gotten the industrial reform into high gear. Queensland cotton, Tasmanian flax, and wool from the country's 120,000,000 sheep were being turned into cloth, webbing and canvas in new factories right at home to replace the British import. Steel production was increased and aircraft and munitions plants had sprouted at Melbourne, Sydney and other capital cities.

But the crying need was lumber! Before 1939 America had been shipping in half as much lumber as Australia produced. Aussie carpenters liked to work with Douglasfir and other softwoods from our Pacific coast, and these had been their standbys for structural work, plywood and paper, while native hardwoods were preferred for furniture, rail-

way ties, posts, flooring and the like. Now lumber shipments were cut to almost nothing, for American troops and supplies pouring into the Southwest Pacific crowded every prewar bottom and every liberty ship that could be had. More timber must be produced and they had to learn ways to substitute native timber for imports in such a way that the maximum of high grade airplane stock and structural material would be left for specialized uses.

Felling the forest giants, sawing them and hauling the finished lumber out of the rugged mountains to war plants and railroad sidings in ever increasing amount was the challenge of the Australian lumberjack. Early in the struggle labor unions, government representatives and operators had gotten together on special wartime operating conditions which included arbitration of disputes, and with only isolated exceptions there's been a clean record of no labor tieups in the mills and bush since.

However, before 1941, little had been done to keep the timbermen on their jobs, and the armed services had attracted a big proportion of these two-fisted mountaineers. Scores of them were with the first detachment of Australian Imperial Forces to go overseas—the outfit that fought so gallantly at Tobruk. It wasn't until 1942 that adequate provisions were made to "freeze" experienced woodsmen to their jobs, then shortly afterwards the army began releasing a few at a time to return to the bush. Meanwhile, special schools for bulldozer operators and logging truck drivers had been set up by the Forests Commission to train men for specialized jobs.

Axmen and timber fallers can't be turned out by a school, though. Particularly fallers up to the Australian standard. Sure, the beginner can learn faster if an old hand will take an interest in him, but good axmen could no more be produced in a few months at school than could a man who had never played baseball be turned into a major league batting star in a season.

Axmanship means even more in those hardwood forests than it does in the softwood big-timber country of the northwestern United States. Though the reason is a bit obscure, the Aussie fallers stick to the older method of chopping the entire undercut, and sometimes fall four-and five-foot hardwoods entirely with an ax although this latter is not usual nowadays. In America the lower half of the undercut and all of the back cut are, of course, sawn. The mountain ash fallers work on springboards ten feet or so off the ground since the stumps are usually cull wood. Each man has two axes—one a standard long-handled falling ax and the other a short-handled



ax with the same weight head for close-up work from the springboard. You never see a double-bitted ax there.

Chopping isn't just a job to these men—it is a sport as well. After six days of heavy labor they'll sometimes travel for miles to enter chopping contests. There is a local meet somewhere nearly every week, and annual contests in Melbourne and other large cities are regular sporting fixtures.

The logging camps I visited do not provide nearly as comfortable living conditions as most American camps. The sparse population is largely responsible, for where America's mountains are crisscrossed by roads and dotted with settlements providing mail, transportation, stores and entertainment, the great Dividing Range of Queensland, New South Wales and Victoria is still pretty much a wilderness. Camps are situated at the ends of rough hauling roads and timber trucks often are the only communications over great distances. There is no social life for families and few men bring their wives into the bush. This was no small factor in war production, for when war started a good many married men left the woods for work in city war plants, where they could earn as much or more money and live at home.

Forest fires, however, brought about the biggest manpower problem. In 1939 seventy-one persons, most of them loggers and their families, were burned to death in the forests of Victoria. Forty-six sawmills, representing three-quarters of the milling industry, were destroyed that year and 2,000,000,000 board feet of virgin eucalyptus timber was burned. Such desolation is hard to picture. Whole mountain ranges aflame—hundreds of kangaroos, wallabies and koala bears burned to death—scores of little settlements back in the hills with only bits of twisted mill parts to show where they formerly stood.

The 1939 holocaust was Australia's worst, but only a repetition on larger scale of the crimson plague that has swept through the bush every year since the commonwealth was settled. Lightning isn't a big cause of fire there as it is in this country and pretty nearly every blaze is man-caused. The bush fire disasters are a product of civilization. Until 1939 public interest in their control was indifferent. As in the early days of western America, it seemed that the forests were unlimited, and since more than two-thirds of the people of Australia live in municipalities, the country folk had little to say about allotting money for fire prevention. It took a disaster to awaken the nation, but once fully aroused the people took vigorous action.

The Forests Commission of Victoria, which administers the "reserved forests"



Lumber is still a critical material "Down Under," but the Aussies have about doubled prewar production—have made up for loss of imports

occupying a tenth of the state's land and whose woodsmen had been waging a relentless but losing battle with inadequate equipment, was given the green light to start modernizing its fire control organization. A progressive young district supervisor, A. O. Lawrence, who had worked in the field through many hot fire seasons, was made fire control officer for the state and given a pretty free hand. Lawrence is typical of the Australian professional forester, a product of the State Forestry School which conducts a three-year course for a small group of carefully selected men, with the sole purpose of providing personnel to administer the reserves.

Victorian forestry was at a pretty low ebb when Lawrence took over his new job. With the country just entering

war the milling industry was burned out, more than half of the state's virgin mountain ash timber stood as blackened trunks guarding eroding hillsides, and the majority of timber workers were reluctant to go back into the bush where so many of their comrades had been trapped and burned. Sawmill men, too, hesitated to risk their money to rebuild under such uncertain conditions. Quick action was required. It was estimated that if salvage was begun immediately, half of the valuable hardwood trees in the burned area could be marketed before insects and weathering destroyed the wood. The eucalypts are pretty hardy and many large trees are still in good condition ten years after a fire, but the small stuff lasts only from two to five years.

Lawrence's approach was practical. First, he said, make the bush safe for the hills people by building fireproof shelters where families and if necessary firefighters too could "hole up" until the crest of a fire passed over. It was a revolutionary scheme and far from a one-man job. Health experts were called in to figure the air requirements for a sealed underground chamber, and a few veterans who lived through fires in hastily dug holes described what the centers of those whirling hells of fire were like.

The dugout that I looked over was near a little mill tucked deep in a valley

passes its peak in that time, although it might not be comfortable to leave the shelter until some time after the entrance is opened. The standard specifications provide ninety cubic feet of air per person for the six hours. Inside are water barrels (running water would cause too high humidity), rough benches and some emergency rations.

The effect of the first few dugouts was extremely gratifying. Workmen returned to their jobs, public cooperation in fire prevention improved, and soon there were reports of lives being saved by the new installations. Lawrence's original idea had been for the state to build a

161 have been put into operation.

Once a fire gets a good start in the Australian bush about all you can do, in the words of Fireman Lawrence, is to "run like hell and pray for rain." Americans have seen some of these roaring crown fires that leap from ridge to ridge, creating their own wind and moving faster than a horse can run. Even with the advanced fire-fighting equipment and technique of American forest protection services no way has been found to bring them to the ground until slackened wind and high humidity or a change in fuel type slow them up. Many foresters believe that mass bombing



It took a disaster to arouse the people of Australia to forest fire prevention and protection. The holocaust of 1939 claimed seventy-one lives, mostly loggers and their families, wiped out forty-six sawmills and destroyed two billion feet of virgin timber

that could be a real death trap if a fire got away under the right conditions. You enter through an "L" shaped tunnel, the inner end of which is closed by an air lock formed simply by hanging two sets of heavy blankets about four feet apart. During a fire men take turn about standing in the lock soaking the blankets with water kept in barrels there. Because the entrance is offset, the flames can't lick directly at the coverings. The blankets are left open until the air begins getting too smoky, then the seal is closed and the shelter contains enough air to sustain the rated number of occupants for six hours. Even the fiercest fire

dozen or so dugouts in the most dangerous areas, but now his department was flooded by requests from residents of nearly every backwoods community, some wanting dugouts built for them and others merely asking for plans. The Forests Commission didn't have funds to fulfill all the requests, yet it was dangerous for communities to go ahead on their own since a poorly built shelter could become a death trap. The outcome was passage of a new law requiring logging operators and communities in the danger areas to provide dugouts capable of sheltering everyone within their zone of responsibility. Since then,

ahead of the fire with chemicals dropped from planes offers postwar possibilities, but no practical method has yet been proposed.

Compared to the Australian bush even northwestern America's fire hazard seems dwarfed. In dry years, such as the past summer, there may be seven months without rain. Humidity falls to six percent (twice that is dangerously low), and dry northerly and westerly winds off the desert blow for three days and nights without letup at eighty-miles-an-hour and more. The oily underbrush burns like kerosene and ribbons of eu-

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Artificial feeding leads to bunching on the feed grounds and, as the natural food diminishes, the deer become more and more dependent on man's bounty—a vicious circle. In this gulch forty-three percent of the herd died

## KILLING DEER BY KINDNESS

By ARTHUR H. CARHART

THE blizzards howl, the snow drifts deep, winter reigns, and many good-hearted folk move toward killing deer by kindness. They believe they are benefiting deer when they persuade their game and fish officials to feed them hay. Actually they're setting a death trap.

This is not in line with general observations—indeed, it may seem quite ridiculous. A deer is a cud-chewing animal; so is a cow. Cows thrive on alfalfa. Logic argues that deer should do as well. That may be logic, but it is untrue.

Feeding hay to deer might remain a controversial subject if the field facts were not available to establish the truth. To begin with, a deer is a browse-eating animal (see "What Deer Eat" in the August 1944 issue). Even in winter, twigs and buds are moist. Little grass is eaten by deer at any time, and that mostly in the spring. Hay is dry grassy stuff quite unlike browse or even fresh spring grasses. Extensive field studies show that in summer, autumn and winter, more than ninety-nine percent of a deer diet is derived from other than



Sweetening up the hay—pouring stock food over the ground alfalfa—killing diet for deer

grass; a few weeds, but mostly browse.

It may be well to review a specific case history of feeding operations on a range where supplemental and sustaining feeds were used. It isn't a happy story, but it is a true one, and something to dissuade proponents of winter feeding of deer except in dire emergencies, when they can subsist on hay for a limited period, and live to the next season.

The Gunnison district in Colorado has had one of the major herds of mule deer in the West. By reasonably accurate census methods, it was found that approximately 23,000 deer wintered on 140,000 acres of native winter range. As snow filled in over higher ranges, the animals sought the sagebrush flats at lower elevations. Citizens saw the animals standing hock-deep in snow with not much feed available and the cry went up to rush hay to the starving deer.

That started about fifteen years ago, before the herd increased to the 23,000 peak. The deer found easy feed around troughs where milled alfalfa and pre-

pared stock food were doled out each day. They bunched in and ate. The more feed put out the more the deer formed the habit of looking to man for winter sustenance.

With the Gunnison program started, other communities took up the campaign. A half dozen or more areas demanded and got winter feeding. A few years ago, the total cost of winter feeding of deer and elk in Colorado exceeded

The sage was clipped by deer until it has died out close to the feed grounds and is waging a losing fight for quite a distance out from the feeding areas. As natural foods diminished, probably a greater proportion of the artificial feeds was taken by the deer. It proved a vicious cycle.

In the winter of 1939-40, a field crew of trained foresters and range management and wildlife graduates made a

numbered 744 at the beginning of the season lost 319 animals, or forty-three percent. That was by actual count; there may have been some in each case that died but were not found. None was counted twice, since each carcass was marked by lopping an ear when it was tallied.

Those were the greatest losses in any single watershed area—but the loss was high in others.



Thanks for the hand-out in the trough, but I'll die if you keep it up! And (left) proof of the wrong kind of "pudding"—a fawn, dead right on the feeding grounds

\$40,000; money from the game fund was used for the purpose.

So long as adjacent hillsides still carried sufficient sagebrush, serviceberry, scrub oak, snowberry and rabbit-brush to supply a reasonable balance between artificial feeds and natural forage, the loss around feed grounds was not alarming. But the very fact that the feeding program bunched the deer in a restricted area threw a heavier burden on the brushy plants nearby.

study of the feed grounds to determine what actually was happening there. Before that time, while the loss was alarming, it was accepted as a natural happening. As a season ended, the deer that had died were dragged into piles, soaked with oil and burned.

In that one season we learned how terribly destructive this feeding policy might be. In one gulch, where seventy pounds of good ground alfalfa and ten pounds of stock food per animal were used, there was a total population of 1,332 deer. Before spring 427 were lost out of that herd—almost a third. In an adjacent gulch, with a little more artificial feed per animal, a herd that

The most grievous loss occurred among the fawns. In the first gulch cited, 373 out of the 427 kindness-killed deer were fawns—the young crop that should have gone on to replenish the future herd. In the second gulch, 277 of the 319 dead deer were young.

Even in that first year, we began to get the key to why this was happening. One watershed in the seven studied contained 1,156 head of deer at the beginning of the season. Actually, more hay and stock food per animal was consumed on feed grounds of this herd than at other points. But only 162 animals died there; a loss of fourteen percent as compared to higher losses in other gulches. But there is the point; that gulch is wide, with open slopes, thick on its sides with natural browse plants.

There could be only one answer—while the deer were getting a larger individual poundage of artificial feed, they also were securing enough native browse to offset the effects of too much gratuitous hay.

There was still another indication that this was the partial answer to why deer die when relying too much on feed from troughs and hay bins. About twenty miles away, in even higher country, with snow conditions as bad, was another portion of the Gunnison deer population. This second area had about as many deer wintering as was around the seven feed grounds where the death

corn fodder would at least feed himself down to a weakened condition. Deer on the unnatural diet of artificial feeds do the same. They may appear to be fat, but their stamina is lowered. Then the parasites and diseases attack, finishing the animal.

Many times the writer has seen deer come to the feed troughs, apparently in good condition, fill up on bad bounty, and with a full paunch, walk a few score steps, slump to the ground, lie in a stupor and die.

With evidence at hand, we believe there is some indication that browse either supplies a vegetable acid or a

of frozen cull apples for the mere hauling. He put these on the feed grounds beside the troughs. The deer loved them. At the end of the season, the deer were fat, the apples were gone, the loss was negligible.

But there is a second established fact that dry hay, even good milled alfalfa, does a deer no good. Being dry, it is abrasive. As it is swallowed, it scratches the delicate lining of the deer's gullet. Tiny cuts result. The deer are not in the best condition in mid-winter, and the cuts are not readily healed. They become infected. Throat muscles then become inflamed, and the deer cannot open its jaws wide enough to even whip its tongue around and clean out the pouches of its cheeks. Food collects there, impacting, bulging out until the sorry animal looks like a busy squirrel with cheeks full of nuts. All the effects of this scratched, inflamed alimentary canal stack up to kill the animal. This is not only the case with deer, but also with elk. In the Jackson Hole country and in the Gunnison district elk also fed hay have developed this condition and died.

Last year, eight big truckloads of trimmings from peach orchards were hauled to one Colorado feed ground; the deer ate hay, then turned to the pile of browse for their needed twiggy food. Few deer died on the feed ground that season. A trial of mineralized salt that we hoped would offset the lack of certain elements lacking in the artificial feed proved of no value. When conditions allow continuance of tests, some easy and economical means for supplying required elements of diet to make artificial feeding possible may be found. At the moment, only cull apples and actual browse hauled to feed grounds to supplement the hay diet have proven of value.

But apples cost money—and they are not obtainable in many sections. Orchard prunings must be collected and hauled if they are used. They may point the way to a solution, but fall short of being one.

If these were the only studies that had been made there might be reasonable doubt about the findings. But an almost parallel set of answers was secured in Utah, where a large, experimental pasture was built and deer were fed different combinations of foods, including some groups that were supplied native browse. Where they had browse, they did well. But one pen of deer, fed on ground alfalfa and cottonseed cake, had to be taken off that diet a week before the fifty-three day experimental period was completed. While perhaps not in such detail nor offering such a volume of data, studies in other states, many

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Big sagebrush—healthy, natural—the right winter feed for deer

losses occurred. But this second group was given little artificial feed; only at one critical period when it served a good purpose. The rest of the winter the group was spread out, eating natural foods, hustling their way, tough as it was. At the same time the losses were checked at the seven feed grounds, a thorough check was made of winter losses in the area where the deer ate natural foods. By positive and actual tally, 1,365 deer were lost at the areas where winter feed was furnished; on the other range, where deer rustled their own browse feeds, only three carcasses were located.

What happens when deer eat hay to cause their death? Basically, it is malnutrition. A human fed dry oats and

type of roughage required in metabolizing whatever the deer may eat. And that this factor is lacking in artificial feeds being used. Perhaps it is tannic acid in the bark; or the fibers found in browse that supply needed roughage. Studies to determine the facts were interrupted by the war.

That a vegetable acid may be the answer is indicated in the results of the ingenious acts of Art Rogers, a game warden at Paconia, Colorado. Rogers had had his experience with the loss of deer through the feeding of hay. He figured that if something could be added deer might subsist on the artificial feed and thrive. There are apple orchards in that district and Rogers secured several loads



# PULPWOOD

BY F



"THEY say we need wood to win the war and I aim to do my part." The speaker was Howard Ross, negro farmer of Eagle Rock, Virginia, who lost both legs in a railroad accident twenty-five years ago. And he is doing his part, cutting pulpwood—twelve cords so far—for the West Virginia Pulp and Paper Company.

So are hundreds of other patriotic men and women who because of age, physical handicaps, or for other reasons might be expected to contribute to victory in less strenuous ways. But with a critical manpower shortage in the woods and a warning by WPB that military and essential civilian pulpwood needs cannot be fulfilled unless there is a substantial increase in production, these patriots, mostly farmers, have taken up axes and saws. And every cord of pulpwood they can deliver to the mills is needed.

Tom Linkswiler of Clifton Forge, Virginia, is ninety-one years old and has a 100-acre farm to manage. Nevertheless, on "slack days," he has been able to cut ten cords of pulpwood from his woodland. Mrs. Lucy Peters of Gladstone, Virginia, fifty-four years old, can cut a cord a day.

Mrs. Lucy Peters, above, works with single-bit ax, cuts a cord a day

Howard Ross, at left, though legless, has cut twelve cords of pulpwood



# PATRIOTS

FREDERICK J. SHULLEY

doing the entire job—felling, bucking and peeling—with a single-bit ax. Her husband is in poor health, unable to work, and she has a family to care for. Yet she delivered 140 cords of pulpwood to the war effort in 1944.

In Garrett County, Maryland, Elmer and Beulah Herman form a man-and-wife team at the pulp mill at Luke. Elmer works around the woodyard and in the mill, while Beulah is on a paper cutting machine. But after their mill shift and on off days, both put in five or six hours cutting pulpwood in their own timberland, often laboring until dark. Using a power-saw, with which they can cut three cords in a full day, they delivered seventy cords to the Luke Mill last year.

Of course, thousands of farmers and woodsmen are cutting pulpwood and they form the backbone of our war production. But patriots such as Tom Linkswiler, Mrs. Peters, Howard Ross, the Hermans and hundreds of others who are doing their part despite the handicaps of old age, disabilities and long hours at other work deserve special tribute. Americans will salute them.

Ninety-one-year-old Tom Linkswiler, (above) cut ten cords on "slack" days

Mr. and Mrs. Elmer Herman team up with a power-saw to cut 40 cords





# ONE YEAR OF THE FOREST APPRAISAL

By JOHN B. WOODS, Director

SLIGHTLY more than a year ago the Board of Directors of The American Forestry Association became convinced that interested individuals and organizations were going to provide a sufficient sum of money to carry out a nation-wide examination of the effects of war upon America's woodlands. As the forester selected to direct the project, the writer was called to Washington and instructed to begin work as of January 1, 1944.

Since a director could not function without a staff, there was immediate and urgent need to enlist a number of other foresters of recognized professional standing and with certain special qualifications for this work. Appeals were addressed to leaders in the profession, federal, state and private, including the heads of forestry schools, asking for nominations of candidates for positions as consultants for eight regions into which the forty-eight states might be grouped. Response was prompt and in view of the manpower shortage, very helpful.

By early March, five selections had been made, and on July 1 the roster was complete. However, several selectees could not secure release from other obligations without some delay. It is interesting to note that these men had been recruited from the faculties of four forestry schools, from the forest extension services of two states, from the War Production Board, and from the United States Forest Service via the retirement route. Making allowance for certain changes brought about by illness in one region and extra summer-time personnel in another, the appraisal time actually put in during 1944 by the field staff adds up to sixty-four man-months.

In other words, the project had gotten under way to an extent equivalent to eight months' work in eight regions. Actually, some men began earlier than others. As a preliminary to starting actual appraisal work, each regional consultant put in several weeks getting acquainted with sources of information in all of the states making up his area. The number of states in each region varied from four, as in the Pacific Coast and Southeastern units, to ten in the Northeast. State foresters, representatives of other local agencies and of many federal services, industrialists and private landowners, totaled a formidable number of people possessing information of value. And many might be able

to assist in gathering current data in the field, as well.

An early constructive action, approved by the Association's Board of Directors, and carried out by President W. S. Rosecrans and Executive Secretary Ovid Butler, was the appointment of an Advisory Council to counsel the appraisal staff in matters of fact-finding scope and method. Every member of this group is a veteran forester of long service and high attainment. They are: Samuel T. Dana, long-time dean of the School of Forestry and Conservation, University of Michigan; James W. Girard, veteran timber expert of the U. S. Forest Service; William B. Greeley, former Chief Forester of the United States, who, since 1928

has guided the lumbermen of the Pacific Northwest toward industrial forestry; William G. Howard, for more than a quarter century in charge of state forests and parks in New York; and Eric O. Siecke, farmer and present mayor of Wisner, Nebraska, who organized state forestry in Texas. These men bring together a knowledge of American forests and of the needs and attitudes of groups dependent upon these woodlands that is complete and authoritative.

The Advisory Council met for the first time in March and approved certain tentative plans of procedure. Frequently during the year regional consultants have taken local problems to the individual council members. Shortly after



Photo interpretation—plotting land use data on transparencies over aerial photographs in the AAA laboratory at Washington

this issue of **AMERICAN FORESTS** reaches its readers, the group will meet for the second time in formal session to confer with the field staff regarding the soundness and efficacy of methods used in appraising forests of twelve or more states.

For a week prior to January 17, date of the Advisory Council meeting, regional consultants will have reviewed together the work done by them in areas scattered from Narragansett to Humboldt Bay and from Lake Superior to Mississippi Sound. Considerable work has been done in a dozen states; in eight the task is completed and final returns are being assembled. Out of a welter of methods and organization schemes necessitated by various circumstances, the appraisal staff is now distilling a set of rules and plans to fit the conditions that may be found in the states that remain to be worked.

Circumstances have been found to differ from state to state. While most of America's forest areas have been photographed from the air, this flying covers a span of ten years or more, so there are some places where air photos are sadly out of date. In some states there have been forest inventories of authoritative character, in others none. Some forest surveys are practically up-to-date, but most are from three to six years in arrears. In the matter of local assistance, all state foresters have indicated a willingness to help, yet, as might be expected, their facilities for such cooperation have varied.

First state to be completed is Rhode Island. State Forester E. C. Jacobson was able to place several capable technicians at Regional Consultant P. L. Buttrick's disposal. Further, the state forestry department owned a complete set of aerial photographs on a scale large enough to provide a wealth of forest data. The result was Rhode Island's first detailed forest inventory. Similar methods of photo interpretation were employed in Maryland, where State Forester J. F. Kaylor assigned one of his staff to work upon the project, assisted for short periods by local wardens. In both states field technicians of the United States Soil Conservation Service



Contrast between fields and woodlands is shown in this aerial photograph

were extremely helpful.

In Michigan, Regional Consultant J. A. Donery found excellent forest type maps available for reference. A large number of state and federal field men stood ready to assist. Here the method used was to go from county to county, sampling timber stands, conferring with informed persons, checking earlier reports, and gathering new data. Roy C. Brundage of the Central States Region, worked many Indiana counties in the same way. However, in certain parts of the latter state, where similar forest conditions extended across several counties, aerial photos were used to determine land use and forest types, checked by examination of sample plots on the ground, and the data so obtained from certain sample counties were applied to others of similar character. Both states were completed before December 31.

When Georgians learned about the plans for an appraisal of the tree growth in their state there was immediate and favorable response from many agencies interested in forests and dependent industries. Such local groups as the Macon Chamber of Commerce, Savannah Port Authority, Georgia School of Tech-

nology, the School of Forestry at the University of Georgia, the State Agricultural and Industrial Development Board, the Georgia Forestry Association and the State Forestry Department joined in proposing that efforts be made to enlist local support of a detailed and intensive county by county survey.

Under the auspices of the Georgia Forestry Association, funds were sought by committees in a dozen key cities. The Agricultural and Industrial Development Board undertook direction of a special Georgia project, employing Professor B. F. Grant to head it up. State Forester John M. Tinker detailed one of his assistants to aid in field examinations, with additional help from district wardens and local rangers. Regional Consultant Charles R. Ross represented The American Forestry Association. Field work was begun in September and will be completed within a year.

The Tennessee Valley Authority had conducted a forest survey in fifty-four counties of that state. The forty-one remaining counties were attacked as a joint project of the Forest Resource Appraisal and the State Forestry Department. State Forester James O. Hazard



Planted forests, like this one in Georgia, are recorded



Fifty-year-old second growth loblolly pine in Arkansas—similar to much of the pine now being appraised in that state

assigned W. Foster Cowan to work with Regional Consultant M. A. Payne.

In Tennessee, as in Georgia, reliance was placed upon aerial photos for land use and forest type data (supported by ground checking). The American Forestry Association purchased the photographs, which will remain in state forestry files. Because of ill health, Mr. Payne was obliged to withdraw from the Tennessee project. Assistant State Forester Cowan has carried on by himself, but it is hoped to give him needed assistance early in 1945 so that final results may be assembled by March 1.

Photographs having been purchased for use in Mississippi, it is expected that Mr. Payne will return to work long enough to complete a survey of that state during the first half of 1945. Meanwhile Ed. R. Linn, veteran

private forester and former secretary-manager of Southern Hardwood Producers, Inc., joined the appraisal staff and launched a survey of Louisiana, assisted by State Forester Massey Anderson and several members of his staff.

Mention should be made of the fine cooperation of the Southern Forest Survey. This agency has made available special compilations of the federal survey data and staff members have given generously of their counsel. Forest extension men have been similarly helpful in all the southern states where work has been done.

In Arkansas two special projects were carried out. Eighteen northwestern counties not previously covered by the Southern Forest Survey, were cruised by foresters from the faculty of the University of Arkansas. Another group of volunteers, led by former Forest Supervisor Henry Koen, helped Regional Consultant A. M. Emmerling canvass the other counties, to bring existing information up-to-date. In Arkansas, probably to a greater extent than in most states, private timber owners keep excellent volume and growth records, so much valuable information was obtained from such sources.

During July, August and September, Regional Consultant J. Lee Deen and his assistant, J. C. H. Robertson, moved about to such good effect that field work was completed in Colorado and Wyoming. While aerial mosaics provided valuable land use data, most of their information was obtained from county officers and federal foresters, all of whom were most cooperative. During November and December, Colorado data were assembled. Preparation of a report for Wyoming is a winter project.

It was not possible to begin work in California until October 1. However, when Regional Consultant Burt P. Kirkland arrived at Sacramento he found that the U. S. Forest Service was getting underway a comprehensive survey of the important timber growing counties, and that it was expected that this work would be finished by mid-summer of 1945. At the suggestion of Regional Forester S. B. Show a three-way cooperative project was set up, to which the State Division of Natural Resources and the Forest Resource Appraisal would contribute certain services, while the U. S. Forest Service would carry out the inventory phase under direction of A. E. Wieslander, of the California Forest and Range Experiment Station. This enterprise appears to be going well, and is expected to produce the first really complete picture of California's forest resources.

Thus it may be said that substantial progress has been made in twelve states, while final results have been obtained

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# THE SEELEY LAKE TAMARACKS

By ELMERS KOCH

IN THE wide glacial valley on the west side of Seeley Lake, in the Lolo National Forest of Montana, is the finest stand of western larch in the Northwest—in the world, one might say, since the range of this larch, or tamarack, as it is locally called, is confined to the northwestern United States and British Columbia.

Fortunately preserved from logging operations which removed the timber from adjacent lands over thirty years ago, this tract of several hundred acres is as unique and as beautiful in its own way as the better known redwoods or the sugar pines of the Sierra.

It is not a dark, close forest, but an open, park-like, sunny stand with the big cinnamon colored tree columns rising from a low ground cover of kinnikinnick and pine grass. Some portions of the area have an understory of lodgepole pine, Douglasfir and alpine fir, but the most striking and characteristic

parts of the stand are composed of pure larch from four to seven feet in diameter.

Since the larch is a deciduous tree, this forest has a variable charm which is lacking in most coniferous stands. In the early spring the vivid fresh green of the new larch needles contrasts pleasingly with the darker green of Douglas-firs and lodgepole pines, and the forest floor blossoms out with masses of the striking glacier lily, *erythronium*, which curiously is a creamy white in this locality, rather than the usual bright yellow.

In October, when the larch foliage has turned to a clear golden yellow, and the ground is carpeted with gold from the fallen needles, this forest is breath-takingly beautiful.

The trees are even larger than they appear. In the space of a few acres I measured six trees approaching seven feet in diameter breast high. The largest one measured was seven feet, four

inches. A few of these great trees have been cut, so it is possible to determine their age by counting the rings on the stumps. Two medium sized trees about four and a half feet in diameter showed 595 and 715 rings. The largest stump counted was a giant six feet, six inches inside the bark, and I counted 915 rings. This tree was cut about thirty years ago. In counting the rings it is necessary to use a magnifying glass, as their texture is very fine, about twenty-five to thirty rings to the inch. Century after century, since the year 1000 A.D. this infinitesimal growth has been laid on each year to produce a seven-foot tree. It seems almost more like the geological process of building up rock strata by alluvial deposits through the ages than the growth of a living organism.

Many of the trees are defective, being affected by the quinine fungus. The long, chalky white fruiting bodies of

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The big tree columns in the open forest rise from a clean floor of kinnikinnick and pine grass

# More About Three Forks

By LOUISE and STANLEY CAIN

TOM ALEXANDER, operator of Cataloochee Ranch, which borders upon the Great Smoky Mountains National Park, wants pack-horse trips sent into the Three Forks area in violation of its standing as a wilderness research area of the park. Mr. Alexander's argument, presented in the November issue of *AMERICAN FORESTS* (Three Forks—Lost Province of the Great Smokies), takes the persuasive form of a smooth-running narrative with a few expository paragraphs to toll the bell, either for pack-horse fishing trips in the Three Forks region—or for the national park regulations.

One gathers that the latter is his purpose.

Mr. Alexander's thesis for the violation of this wilderness research area by fishermen, riders, and others represents a case of special pleading and obfuscation, for certain facts are ignored and others perverted to strengthen his position.

There will always be persons and organizations who want to break the rules or seek to have them revised by ridiculing or misrepresenting them in order to gain some special advantage in areas such as national parks. The National Park Service and their friends have continually to fight the encroachment of vested interests desiring mineral, timber, grazing, water, or other "rights" for economic gain. In certain cases their arguments are rather difficult to refute, for the economic gain by a company, corporation, or other organization may be reflected in the economics of a considerable local population. All such cases, and even such a seemingly trivial one as this, must be decided in the light of national park policies of proved need.

That Mr. Alexander himself loves the wilderness is clear from his feeling description of the rich and varied beauty of the Three Forks area. He undoubtedly knows that the Great Smoky Mountains provide one of the few relics in the East of primitive forests, and he

Questions raised by Mr. Tom Alexander in his article, "Three Forks—Lost Province of the Great Smokies," which appeared in the November issue of *AMERICAN FORESTS*, naturally are of concern to the National Park Service. They touch upon a conservation concept that affects the broad field of ecological study. As natural conditions are modified everywhere else, we anticipate that the American scientist of the future will depend more and more upon the national parks for samples of unmodified terrain. It is the hope of the National Park Service that its policies of land management will assure at least a few unspoiled areas which, along with other functions, may provide outdoor laboratories for study of Nature and her works in the original design. The research reserve program of the National Park Service is the one and only plan so far devised which promises to retain unmodified areas for scientific use.

I wish to express my thanks to Dr. and Mrs. Cain for their lucid statement of objectives of ecological studies and the role that the national parks may play in this vital part of America's conservation effort. I subscribe most heartily to their thesis.—Newton B. Drury, Director, National Park Service.

must understand that the preservation of such natural magnificence enables the students to extend the horizons of biological knowledge while at the same time offering peace of soul to those who are beset by the increasing tensions of modern life.

What Mr. Alexander apparently does not admit is that the discipline of constant care as well as emotion must maintain those values which he embraces.



Fraser's magnolia is found up to an elevation of 5,000 feet

It is a first principle that the entire body of a national park should be considered for all time a protected primitive area. The parks are also for the people to enjoy, in so far as the directions of their enjoyment are not inimical to the protection of the land. Yet so driven are men by the mechanizations by which they live that by increasing pressure for more roads, more gas stations, more campgrounds, more trails, and more campsites they are sometimes in danger of destroying the very thing they seek. The comparatively small research areas in the National Park System are designed to prevent such "development."

Officially defined—"A research area is an area designated and set aside for the special study of plants, animals, and other natural features. The types of its protection and the duration of its existence are to depend upon the nature of the features to be studied and conserved." These areas, of which there are twenty-eight in ten national parks, were planned between 1932 and 1940 by the wildlife division of the National Park Service, approved by the director, and are controlled by the superintendents of the respective parks.

The officials of the Great Smoky Mountains National Park have chosen approximately 18,000 acres as one permanent research area. This is less than five percent of the total park territory, which comprises over 440,000 acres. There are at least five larger areas in other parks—three in Glacier National Park, one in Mount Rainier National Park, and one in Rocky Mountain National Park.

The research area in the Great Smoky Mountains National Park, which includes the Three Forks area, contains some of the best examples in the park of virgin forest and unspoiled wildlife habitat, but by no means all of them. Something of the special importance of this research area is suggested by the



fact that it is doubtful if a virgin forest area of comparable size and quality exists in the United States free from development and as accessible to investigators. And furthermore, it is certain that nowhere in America are there finer examples of the complex mixed mesophytic and spruce-fir forest types and their associated biota. It is not too much to say that if this were lost all would be lost.

Even so, protection has come almost too late. Buffalo and elk, once inhabitants of the Smokies, are, of course, long extinct. But other animals disappeared in this century, as lumbering and forest fires sent them to the last virgin areas. Even there they were relentlessly shot and did not find sanctuary until the establishment of the park. The eastern timber wolf and the eastern mountain lion have not been seen in the Smoky Mountains for forty years, nor the eastern otter for ten. Without protection the Virginia white-tailed deer could not have been saved.

The picture is not altogether dark. With the park's vigilant policy some wildlife has rallied, particularly the bear, fox, and ruffed grouse.

These facts relate to the park as a whole. What is the situation with respect to the research areas within the park? Former Wildlife Technician Willis King, whose duty it was in 1934 to determine the best site for a research area and who was largely responsible for the



Three Forks preserves for biological study one of the outstanding relics of virgin forest in the East. This six-foot giant is the largest known eastern hemlock



Part of the research area as seen from Cooper Gap—a wilderness, but by no means inaccessible, the authors maintain

boundaries of the area under discussion, says of it:

"A flock of wild turkeys of undoubtedly pure strain inhabits Breakneck Ridge. The preservation of these birds is considered of the utmost importance. Hawks, owls, and such predatory mammals as bobcats and foxes can find absolute sanctuary in the area. One of the interesting biological features is a colony of red crossbills, a rare and unusual bird, which inhabits the area around Three Forks. These birds have inhabited this particular area continuously for more than ten years and are thought to be a nesting population."

Because of Mr. Alexander's familiar-

killed chestnut, scattered through several closely related forest types and including reproduction following fires of different age, offers excellent opportunities for the study of natural succession and the wildlife readjustments concomitant with it. The grassy bald on Gregory is typical of this unique Southern Appalachian phenomenon about which both scientists and laymen have speculated at length and without agreement; and some aspects of it cannot be understood except as the area is maintained as a completely natural one and observed through the years.

Furthermore, this bald is the scene of a great natural "experiment" in azalea

the park's stand. So, too, is that large segment of the public whose interest in and love of nature is not confined to fishing and horseback riding.

A defense of the whole national park policy regarding research areas can hardly be concluded without specific reference to certain apparent misunderstandings on the part of Mr. Alexander.

He asks why he cannot fish the streams of the research area, and as a defense points out that there are plenty of fish. The answer is that in a research area all the flora and fauna are to be left as undisturbed as possible to work out their own destinies. The significance of this point is emphasized by the fact that there is no fishing allowed in any research area in any of the national parks, although the details of administration are in each case left to the superintendents of the parks. In the Smokies, on the North Carolina side alone, there are ten major watersheds in which fishing is permitted under the usual regulations. In addition, the fire hazard is augmented in fished areas. Although forest fires are not particularly likely in the moist forest type of the research area, they are a definite possibility and would be difficult to detect and control in so remote an area.

Mr. Alexander cannot understand why horses are not allowed in the area. Introduction of plants not native to the area? Nonsense, he answers, horses have been going in there for years, and any damage has been already done.

The park authorities realize that whatever the effects may be they rise with the increased number of animals—and on some trips in the Smokies a single group of riders has used more than forty horses. Apparently, from park reports, one such trip into the Three Forks area in 1936 left much to be desired. The grazing of the horses practically denuded the small valley bottom at Three Forks for one hundred yards in each direction from the camping area. There can be no argument about the damage to natural vegetation by trampling, grazing, and browsing. It is obvious and it increases more rapidly as the number of horses increases.

The correlative problem of the introduction of alien plants is less simple. Along trails, around campsites, and in disturbed areas generally, yes. Weeds carried in by horses will survive, but only as long as the disturbance continues and the woods are open, for they lose out in competition with native adapted species as the processes of natural succession go forward without disturbance. As for undisturbed natural vegetation in a climax condition, the aliens haven't a chance. Ecologists know that this type of invasion simply does not occur. Hence



**Fishing is prohibited in Three Forks so that both fauna and flora may work out their destinies undisturbed—a restriction affecting but a small portion of fishing waters in the Smokies, the authors point out**

ity with the area he is aware of these features and of the abundant native fish population. Surely, too, he can see the usefulness, with respect to open streams, of allowing the native mountain-trout and the stocked rainbow trout freedom to work out the problem of biological balance without the pressure of fishing.

Three other areas have been set aside in the Great Smoky Mountains National Park, bringing the total to about 21,877 acres. They are a 3,800-acre stand of dead chestnut on the north slope of Pinnacle Lead; a seventy-five-acre tract on Gregory Bald, including a grassy-topped peak, and a two-acre tract near Bryson Place on Deep Creek, including a boggy area with sphagnum. All three of these are designated as "biotic succession areas" and are especially protected for their scientific value.

The large tract of recently blight-

hybridization and is one of the famous beauty spots of the park. The small bog is likewise a succession area of interest and represents a unique feature in a region of such perfect drainage that streams are nearly the sole aquatic habitat.

Neither the enlargement of present research areas nor the establishment of additional ones is contemplated in the park. The zealous protection of the existing ones, however, is so important that any encroachment on the vanishing wilderness must be studied seriously, and with a long-range point of view. Ninety-six percent of the park is devoted to the claims of usual public recreational use. The other four percent, where recreational use of certain types might injure research use, must remain inviolate—though not closed to anyone who wants to enter on foot.

Scientists are personally grateful for

with us, as with Mr. Alexander, this particular argument carries little weight.

Mr. Alexander also raises the point of accessibility of the research area—by horse and on foot. The 1936 excursion of a large group of horsemen into Three Forks was a hazardous one, according to reports, and undertaken against the advice of the park naturalist and wildlife technicians. Had it rained, so the report goes, the riders could not have returned with their horses, and as it was, they were forced at times to dismount and lead their animals. Obviously at this date if horses were to go back into Three Forks, a horseback trail would have to be opened up and kept in safe condition.

Without the horses, Mr. Alexander concludes, this area is closed forever, "locked up," as he expresses it, to all but research workers, and maybe even to them.

"Will it ever be available again?" he asks.

The answer is yes, Mr. Alexander, "available" now and forever, for the door has never been shut. Camping permits always have been and will continue to be issued to responsible hikers who backpack the necessary supplies and equipment.

Mr. Alexander further charges that the foot trails have disappeared too, and that the country has become an impenetrable jungle. Yet late this past summer a party of park men who went into the area found the trail without difficulty. Where a few trees were down, they were easily by-passed. This group went in with packs, and found that the "jungle" had not reclaimed the trail from McGee Spring to Breakneck Ridge, as asserted.

The unbroken forest of the research area is in a climax condition and is the



Myrtle Point on Mt. LeConte before it was burned to bare rock by a hiker's cigarette. Fire hazards increase with recreational use



Among the rare plants of the high, cool coves of the Southern Appalachians is Pixie's umbrella. Its only close relative occurs in Japan

product of millenia. It does not change materially in a few years or even centuries. The disturbed areas along trails and about campsites are a different story. With the litter and duff of the forest floor trampled and removed and more light penetrating, these areas sometimes do grow up into "jungles" of blackberry canes, greenbriers, and other native plants. And in places the abandoned manways, although not lost, are more difficult to travel than the undisturbed forest. But the area is not closed to the researcher, nor to the amateur naturalist and lover of the wilderness. They do not stay on the trails anyway. For them a simple eighteen-inch tread without grading, such as the upper part of the beautiful trail to Ramsey Cascade, is a convenience in entry, a time saver, not a necessity.

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# MUSKINGUM PLANS FOR PEACE

By GEORGE D. ROBEY

UP FROM the cool, clear water of man-made lakes a new dusky green is spreading over the rolling hills of southeastern Ohio. Pine tree seedlings by the hundreds of thousands have gained a healthy stand above tall grasses—a sturdy promise of evergreen forests that within a few years will provide wholesome recreation for war-weary people. For fishing, hunting, boating, camping and kindred activities are part of the vast program begun twelve years ago by the Muskingum Watershed Conservancy District.

Flood control, of course, was the genesis of this program, and today fourteen great dams, built under the direction of Army engineers, insure cities and lands within an area of 8,000 square miles against the ravages of flood waters. More than 24,000 individual properties and 5,000,000 acres of land are protected.

But the program of the Muskingum Watershed Conservancy District is more than flood control. Water conservation, soil restoration, economic prosperity to farming areas and vast recreational resources are part and parcel of the ultimate plan. Eleven lakes, ranging from 350 to 2,550 acres of filtered water, elbow their way through the valleys or spread across flat lands behind the big dams, offering fishing of an excellence that has received the plaudits of sportsmen from coast to coast. Now a going concern, the Conservancy is a conservation laboratory demonstrating that new frontiers of natural beauty and industrial opportunities can be created to replace those which man has exploited and exhausted.

Forestry has played a major role in the Muskingum program, particularly in the restoration of worn-out farms within the watershed. The most pleasing evidence of this is found in the evergreen forests spreading over a good part of the 65,000 acres owned in fee by the Conservancy. And work on the 20,000 acres still to be forested is progressing despite war restrictions on labor, mainly because of the efforts of school children who have planted thousands of trees in a program to establish school memorial forests.



The eleven lakes spreading through the valleys or across flat land behind the big dams, will offer the postwar vacationist excellent fishing

An interesting and effective planting technique has been developed by the Conservancy under the direction of H. P. Garritt—a technique that has increased by from fifty to seventy-five percent the number of trees planted per man a day, and at a twenty percent reduction in cost. The chief development is “contour ridging,” a system whereby ridges or small terraces are established on the contour of the land approximately seven feet apart. The trees are set in the loose earth on top of the ridges which are turned up with a plough during the summer prior to the spring planting season. This practice has been found to be exceedingly effective as a soil and water conservation measure; also, it increases growth and survival rates.

On better sites some hardwoods are regenerating naturally, and it is believed that the climax forest will develop in these areas without first passing through the usual plant successions.

Areas in woodland when purchased by the Conservancy are being managed under an improvement and harvesting policy which guarantees a sustained yield. Improvement cutting is carried out at the same time merchantable timber is harvested, which means that diseased and ill-formed trees and others of little or no economic value, as well as grapevines and other growth which impede tree development, are removed. A scale of minimum diameter limits is followed

in trees cut for the market so that the rate of cut is constantly adjusted to the productive capacity of each acre. The woodlands produce large quantities of sawlogs, mine props and pulpwood.

In the large forest areas as well as in the numerous small woodlots scattered throughout the district, every effort is made to encourage wildlife. Den trees, even though defective or otherwise detrimental to the development of good timber, are left standing. Woodlots are fenced against livestock in every practicable instance. Surveys made in these woods, and in others throughout the state, indicate that with continued protection and management, remarkable increases in most species of forest wildlife are assured.

This favorable situation is due, in part, to controlled hunting throughout the woods and fields of the district. Grouse and deer especially have increased, and while the latter are not permitted to be hunted at the present time, an open season will no doubt be possible in future years.

Farms owned in fee by the Conservancy are operated for the most part by tenants on a rental basis. Contour ploughing and other improved methods are encouraged. The Conservancy provides fertilizer and lime, if needed, and insists upon its application to the lands each year. Both the farms and forests of the district are proving profitable,

which means that the current operating expenses of the program have been met and a margin is left over to carry the cost of an expanded program to follow the war.

Not the least feature of this postwar program will be the development of complete recreational facilities. Already boat liveries and concession stands are operating on all of the lakes. Visitors, including fishermen and hunters, have numbered over 1,000,000 each year, with a peak of 1,500,000 in 1943.

There will be an immediate postwar need for cabins and rental cottages, and the Conservancy expects to match private capital in the development of these facilities. Cabin sites are now being leased to individuals on a restriction basis, and the Conservancy contemplates a large building program to meet post-war demand as rapidly as possible.

Leesville Lake, lying near the middle of the lake chain, was one of the first to attain permanent pool level. Final conservation developments of every kind have progressed here with gratifying success. About the steep, wooded shores may be seen the highest stands of red, white and pitch pine plantations; luxuriant growths of elodea climb upward through the clear water to provide the best of habitat for bluegills and bass which have populated the lake in abundance.

Appropriately, the nation's first and largest Conservation Laboratory is located on Leesville Lake, having been



Because of war restrictions on labor, school children are planting thousands of trees in a program to establish school memorial forests

moved there two years ago from Tar Hollow, in southern Ohio. It occupies a group of buildings originally built by the National Youth Administration. Complete with all conveniences, the camp will accommodate 450 people and

is ideally located for the instruction of teachers who come each year from Ohio and other states to learn how to introduce conservation to students of the intermediate grades. Other groups, including youth organizations, make use of the camp throughout the summer months. For here they see at first hand how the welfare of many people may be made secure through the proper alliance of man and Nature.

They see, for example, the importance not only of controlling floods but of a reserve supply of water. Cast iron outlets have been imbedded in seven of the dams so that water easily and quickly can be supplied industries as well as cities, of vital importance during periods of drought, such as during the past summer. Sececa Lake, at the southern end of the chain, could, for instance, during a season of normal rainfall, supply the water needs of Cambridge, with a population of 15,000, without affecting the water level. If no rain fell at all, the city could be served with a fluctuation of only six inches a year.

This vast program, which affects one-fifth of the State of Ohio, was possible because so many federal and state agencies coordinated with a local group to rebuild and restore a flood-ridden, eroded hill country. And while much work remains to be done, the way ahead is clear. The job of making the Muskingum Valley a better place in which to live and play goes forward.



Improvement cutting and other management features in the Conservancy's woodland areas insure a perpetual yield of timber—also good wildlife habitat

# BOY BUILDERS

How Oregon Boys are Being  
Taught to Work With Wood

By HAROLD OLSON

OUT in Oregon lives Oliver Greeley Hughson, who at eighty has found something great in something simple. He is the guiding genius behind the Boy Builder clubs of Oregon, a movement that has put building tools in the hands of more than 2,000 youngsters and taught them how to build real homes, barns, sheds and any other structure useful to man. The idea came to Mr. Hughson in 1933, in the depth of the depression, when he was sixty-nine years old. He has worked wonders with it in a decade and today, in his eighty-first year, has lost none of his enthusiasm.

The idea behind the Boy Builders is simply to take pre-vocational boys who are interested in tools and give them the opportunity to satisfy their urge to create things. This, Mr. Hughson has found, fashions good stuff in the boy's soul. Good boys and bad boys profit alike from Boy Builder learning, with this exception: bad boys are often reclaimed and turned into useful channels. Such instances have been numerous since Mr. Hughson's work started.

The program is unique in many ways.

For one thing, it teaches building in the miniature—real, true building in measurement of one and a half inches to the blueprint foot, or one-eighth actual size. Then it is founded on the simple psychology of steering the boy into something useful that he himself wants to do. Moreover, there is no money in it for anyone. The boy, the community and the future gain from it through the building of skill and character.

Mr. Hughson, who was brought west by his parents in 1883 from Broome County, New York, knows building construction from A to Z. Forty years of his interesting life have been spent as a building salesman, retailer and jobber, manager of employer associations and writer of labor agreements, building codes and construction ordinances.

The apprenticeship system was, through all those years, says Mr. Hughson, the only method by which boys could learn how to build. Since this system is now practically a thing of the past, it seemed imperative to Mr. Hughson that something be done to get boys again started into a knowledge of build-

ing. And on deeper reflection he became sure that such a program would also serve to build boy character.

"Nearly every boy," Mr. Hughson insists, "seeks a medium through which he may express his creative instinct. This need for building things is his ruling urge. Give it proper direction, provide the means and the fundamentals, and the boy will do the rest."

So he set out to interest civic-minded people to help provide a little money to get the program started. His pleas, however, fell on deaf ears, for money was a scarce commodity in 1933. But Mr. Hughson persevered, and eventually was able to raise a few dollars with which to buy tools and blueprints for his first class, or club.

This first club, organized in a grade school near Salem, enrolled six boys. "Do you want to work?" was the only question put to them by Mr. Hughson. All six did.

He then went to nearby sawmills for scrap lumber donations; somehow he got blueprints for houses and barns; and finally saws, hammers, nails and carpenter squares for the boys to work with. They met evenings in a service station, with the operator, who was a skilled hand at carpentry, serving as "boss."

Right from the beginning the boys were engrossed in the work. Without exception they preferred the building class to roaming the streets in the evenings. They fashioned their foundation, laid joists, subfloors and floors, set the studs and put on wall coverings. They cut and placed the rafters, and laid the shingles.

Throughout the entire building job they followed real blueprints, scaling their measurements down to the miniature. Everything was done exactly as grown-up craftsmen of the building trades do it. And the same precision was used. Every stick of lumber that went into the little structures had first to be scaled down to exact miniature size. That meant rafters about the size of a lead pencil, sheathing smaller than a



Mr. Hughson looks on as Boy Builders reproduce Plywood House exhibited at New York World Fair



ruler and shingles an inch wide and correspondingly thin. All this material the boys made themselves out of scrap lumber provided by the mills.

Soon a second class was started. Others followed. Getting these going under competent instructors was a painstaking job for Mr. Hughson, but as the years went by and more people learned of his work, it became easier. Some classes were able to work in well-equipped shops where power tools were available. This helped out greatly in cutting materials down to miniature size. For instance, one building needed 10,000 shingles, which obviously called for machine production. So a jig was fashioned out of a two-by-four. With this traveling back and forth through a power saw, the little shingles were cut in a few hours from small pieces of red cedar. By cutting on the edge of the board, the shingles came out vertical grain, the type desired. Handles and holders were rigged up, of course, to keep fingers away from the saw.

Major impetus was given Mr. Hughson's Boy Builder plan when the 4-H Clubs in Oregon took it on. Before long "minimalic" barns and farm homes were featuring 4-H fairs and exhibits.

"Minimalic" is a word coined by Mr. Hughson. He wanted something rather dynamic to describe miniature building, and he reckons "minimalic" fills the bill. He likes to have it understood that miniature building is not model building. It is true building from real blueprints, only it is on boy scale.

While the 4-H step was a big one, Mr. Hughson still felt the program was not spreading fast enough. More boys should have the privilege of getting started in these builder classes, he thought. So he set out to convince the Oregon Department of Education that the Boy Builder plan should be made part of the pre-vocational school system. His efforts bore fruit. In 1941 "carpentry and building construction" was adopted as an instructional unit in the state industrial arts courses of study. Now "minimalic" building is taught in more than thirty Oregon schools and more are constantly coming into the fold.

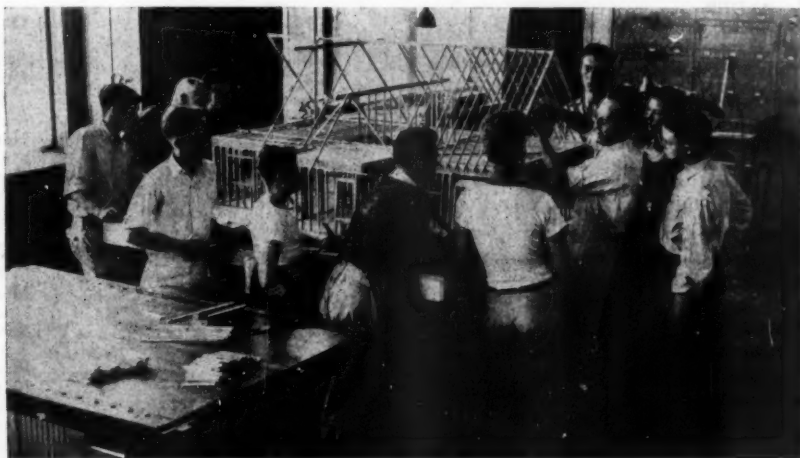
Spreading out like this posed a new problem. Few teachers in the secondary schools were qualified to teach building construction, so a summer school class was started for this purpose at Oregon State College. Mr. Hughson's foundation sponsors this instruction.

Recently he presented his program before the Washington State Board of Education, which evidenced keen interest. Inquiries have come from many other states and Mr. Hughson has hopes of seeing the work take hold all over the United States.

"In advocating the use of the system of 'minimalic construction' as a medium for motivation or the motorization of the interest of the pre-vocational or adolescent boy," Mr. Hughson points out, "it is nowhere claimed it will solve all the problems incident to this period of a boy's life. But it is claimed that by it and with it a teacher may discover and develop a boy's dominant interest easier and faster and with more permanent results than by any other boy train-

class there. He constructed a barn and won with it a scholarship to the 4-H Club summer school at Oregon State College. That led to new interests. He went on to become president of his school class. Now he's a naval officer, decorated for gallantry in action, and his mother gives full credit to Mr. Hughson's program.

Another boy was a runaway. His parents "could do nothing with him." Mr. Hughson got hold of him, sized him up



The boys follow regular blueprints—on a miniature scale, of course. Above, the "boss" demonstrates a house framing technique—below, a garage, barn and windmill under construction



ing program. For love of construction is as a seed already rooted deep in the average boy. And it is also claimed, as a sort of corollary, that the 'boy problem,' where there is such, will be largely solved by the boy himself who is enabled to take on this course in practical, exploratory knowledge."

Instances of actual good evolving from Boy Builder instruction are many. One boy whose early bents had gotten him into reform school joined a builder

and made him "boss" of a builder club that he organized in the boy's home town. The lad straightened out right away. Today he is a lumber grader in a sawmill and lives with his wife and child in a house he built himself.

An outstanding example was a tough "road kid" of fourteen whom Mr. Hughson picked up on the highway. This boy's mother was dead and his father was behind bars. Mr. Hughson figured

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# REPORT ON AMERICAN BIG TREES

In September 1940, The American Forestry Association launched a campaign to locate the largest living specimens of American trees. After four years of diligent search on the part of cooperating individuals, the following "champions" are on record as of January 1, 1945. Common and botanical names listed conform to "Standardized Plant Names" issued by the American Joint Committee on Horticultural Nomenclature. Identification and measurements are by nominators. The challenge is to locate trees larger than those listed, if they exist, and also giants of species not listed. Send all reports to The American Forestry Association, 919 Seventeenth Street, N. W., Washington 6, D. C.

| Species   | Circumference<br>at 4½ feet | Spread | Height | Location of Tree and Nominator  |
|---|-----------------------------|--------|--------|---|
| <b>ALDER</b>  |                             |        |        |   |
| Red, or Oregon, <i>Alnus rubra</i>                          | 15'7"                       | —      | —      | On Nehalem River, Clatsop County, Oregon. Oliver V. Matthews, Salem.            |
| Sierra, or White, <i>Alnus rhombifolia</i>                  | 9'8½"                       | —      | —      | Salem, Oregon. Oliver V. Matthews, Salem.                                       |
| Speckled, <i>Alnus incana</i>                               | 1'4"                        | 20'    | 31'    | Dunes State Park, Indiana. Kendall Laughlin, Chicago.                           |
| <b>ARBORVITAE</b>   |                             |        |        |   |
| Eastern, or Northern White Cedar, <i>Thuja occidentalis</i> | 15'6"                       | 50'    | 125'   | Natural Bridge, Virginia. Fred C. Pederson (Deceased).                          |
| Giant, or Western Red Cedar, <i>Thuja plicata</i>           | 62'8"                       | —      | 100'   | Olympic National Park, Washington. F. W. Mathias, Hoquiam.                      |
| <b>ASH</b>  |                             |        |        |   |
| American Mountain-, <i>Sorbus americana</i>                 | 3'9"                        | —      | —      | Wassataquoik Lake, Maine. Miss Elisabeth G. Weeks, Providence, R. I.            |
| Biltmore, <i>Fraxinus biltmoreana</i>                       | 9'5"                        | 55'    | 80'    | Madisonville, Ohio. Miss Emilie Blome, Madisonville.                            |
| Black, <i>Fraxinus nigra</i>                                | 17'4"                       | —      | —      | Sparkhill, New York. Dexter B. Dawes, Englewood, N. J.                          |
| Blue, <i>Fraxinus quadrangulata</i>                         | 9'6"                        | —      | —      | Piqua, Ohio. John Pickin, Dayton.   |
| Green, <i>Fraxinus pennsylvanica lanceolata</i>             | 10'6"                       | 85'    | 72'    | Baltimore, Maryland. F. W. Besley, Baltimore.                                   |
| Oregon, <i>Fraxinus oregona</i>                             | 18'                         | —      | —      | Near Burlington, Oregon. T. J. Carlson, Corvallis.                              |
| Red, <i>Fraxinus pennsylvanica</i>                          | 8'9"                        | 49'    | 62'    | Riverside Woods, Cook County, Illinois. Kendall Laughlin, Chicago.              |
| White, <i>Fraxinus americana</i>                            | 19'9"                       | —      | —      | Near Glen Mills, Pennsylvania. H. Gleason Mattoon, Philadelphia.                |
| <b>ASPEN</b>  |                             |        |        |   |
| Bigtooth, or Largetooth, <i>Populus grandidentata</i>       | 2'11"                       | 22'    | 59'    | Dunes State Park, Indiana. Kendall Laughlin, Chicago.                           |
| Quaking, <i>Populus tremuloides</i>                         | 10'2"                       | —      | —      | Manti National Forest, Utah. J. W. Humphries, Ephraim.                          |
| <b>BALDCYPRESS</b>  |                             |        |        |   |
| Common, <i>Taxodium distichum</i>                           | 42'                         | —      | 126'   | Near Sandford, Florida. Devereux Butcher, Washington, D. C.                     |
| <b>BEECH</b>  |                             |        |        |   |
| American, <i>Fagus grandifolia</i>                          | 15'10"                      | —      | 55'    | Cannon, Delaware. William S. Taber, Dover.                                      |
| <b>BIRCH</b>  |                             |        |        |   |
| Gray, <i>Betula populifolia</i>                             | 4'3"                        | 31'    | 58'    | Near Catonsville, Maryland. F. W. Besley, Baltimore.                            |
| Paper, or White, <i>Betula papyrifera</i>                   | 18'                         | —      | —      | East Northfield, Massachusetts. William P. Wharton, Groton.                     |
| River, or Red, <i>Betula nigra</i>                          | 9'7"                        | 78'    | 77'    | Near Easton, Maryland. F. W. Besley, Baltimore.                                 |
| Sweet, or Black, <i>Betula lenta</i>                        | 11'                         | 87'    | 80'    | Near Port Deposit, Maryland. F. W. Besley, Baltimore.                           |
| Yellow, <i>Betula lutea</i>                                 | 13'9"                       | 63'6"  | 88'    | Green Mountain National Forest, Vermont. Devereux Butcher, Washington, D. C.    |
| <b>BOXELDER, <i>Acer negundo</i></b>                        | 14'8"                       | 90'    | 95'    | Near Spring Brook State Park, Ohio. O. E. Files, Toledo.                        |
| <b>BUCKEYE: Horsechestnut</b>                               |                             |        |        |   |
| California, <i>Aesculus californica</i>                     | 12'9"                       | 40'    | 35'    | Olema, California. R. H. Menzies, San Francisco.                                |
| Ohio, <i>Aesculus glabra</i>                                | 8'1"                        | 60'    | 90'    | Cascade Park, Elyria, Ohio. O. E. Files, Toledo.                                |
| Yellow, or Sweet, <i>Aesculus octandra</i>                  | 15'8"                       | —      | —      | Great Smoky Mountains National Park, Tennessee. Dr. Stanley A. Cain, Knoxville. |
| <b>BUCKTHORN</b>  |                             |        |        |   |
| Cascara, <i>Rhamnus purshiana</i>                           | 9'5"                        | —      | 60'    | Near Rockport, Washington. T. J. Carlson, Corvallis, Ore.                       |
| Common, <i>Rhamnus cathartica</i>                           | 2'6"                        | 16'    | 22'    | Schiller Woods, Cook County, Illinois. Kendall Laughlin, Chicago.               |
| <b>BUTTERNUT, or White Walnut, <i>Juglans cinerea</i></b>   | 9'10"                       | 84'    | 64'    | Kirkham, Maryland. F. W. Besley, Baltimore.                                     |
| <b>BUTTONBUSH</b>   |                             |        |        |   |
| Common, <i>Cephalanthus occidentalis</i>                    | 1'6"                        | 11'    | 12'    | South of Lisle, Illinois. Kendall Laughlin, Chicago.                            |

| Species   | Circumference<br>at 4½ feet | Spread | Height | Location of Tree and Nominator   |
|---|-----------------------------|--------|--------|--|
| <b>CATALPA</b><br>Northern, <i>Catalpa speciosa</i>                                     | 17'10"                      | 73'    | 58'    | Near Ellicott City, Maryland. F. W. Besley, Baltimore.                                 |
| <b>CEANOTHUS</b><br>Blueblossom, <i>Ceanothus thyrsiflorus</i>                          | 3'3"                        | —      | —      | Near Riverton, Oregon. Oliver V. Matthews, Salem.                                      |
| <b>CEDAR</b><br>Eastern Red-, <i>Juniperus virginiana</i>                               | 11'9"                       | 43'    | 54'    | Near Easton, Maryland. F. W. Besley, Baltimore.  |
| Incense, <i>Libocedrus</i>  | 28'                         | —      | —      | Yosemite National Park, California. Frank A. Kittredge, Yosemite National Park.        |
| <b>CHERRY</b><br>Bitter, <i>Prunus emarginata</i>                                       | 5'5"                        | —      | —      | Near Crown Point, Oregon. Oliver V. Matthews, Salem.                                   |
| Black, <i>Prunus serotina</i>   | 15'8"                       | 75'    | 60'    | Near Worton, Maryland. F. W. Besley, Baltimore.  |
| Common Chokecherry, <i>Prunus virginiana</i>  | 12'3"                       | —      | —      | Lawrenceville, New Jersey. C. W. Schisler, Trenton.                                    |
| Pin, <i>Prunus pennsylvanica</i>  | 4'11"                       | —      | 70'    | Great Smoky Mountains National Park, Tennessee. Arthur Stupka, Gatlinburg.             |
| <b>CHINKAPIN</b> , Giant evergreen, or Western, <i>Castanopsis chrysophylla</i>         | 10'4"                       | —      | 125'   | Near Willits, California. Emanuel Fritz, Berkeley.                                     |
| Ozark, <i>Castanea ozarkensis</i>   | 3'5"                        | 35'    | 40'    | Hot Springs National Park, Arkansas. Kendall Laughlin, Chicago.                        |
| <b>COFFEETREE</b><br>Kentucky, <i>Gymnocladus dioica</i>                                | 12'6"                       | 75'    | 75'    | Near Madison, Ohio. Newton G. Armstrong, Cleveland.                                    |
| <b>CRABAPPLE</b><br>Oregon, or Western, <i>Malus fusca</i>                              | 5'4"                        | —      | —      | On the Nehalem River, Clatsop County, Oregon. Oliver V. Matthews, Salem.               |
| Prairie, <i>Malus ioensis</i>   | 2'5"                        | 15'    | 28'    | Swope Park, Kansas City, Missouri. Kendall Laughlin, Chicago.                          |
| <b>CYPRESS</b> , Modoc, <i>Cupressus bakeri</i>   | 10'1½"                      | —      | 110'   | Near Millers Lake, Oregon. Oliver V. Matthews, Salem.                                  |
| <b>FALSECYPRESS</b><br>Lawson, or Port Orford Cedar, <i>Chamaecyparis lawsoniana</i>    | 27'2"                       | —      | 200'   | Squaw Creek, Coos County, Oregon. Oliver V. Matthews, Salem.                           |
| Whitecedar, or Southern Whitecedar, <i>Chamaecyparis thyoides</i>                       | 10'5"                       | 25'    | 60'    | Near Milford, Delaware. W. S. Taber, Dover.  |
| <b>DOGWOOD</b><br>Flowering, <i>Cornus florida</i>                                      | 5'10"                       | —      | —      | Chowan County, North Carolina. R. W. Graeber, Raleigh.                                 |
| Pacific, or Western, <i>Cornus nuttalli</i>   | 6'11"                       | 45'    | 100'   | Milwaukie, Clackamas County, Oregon. Oliver V. Matthews, Salem.                        |
| Padoga, <i>Cornus alternifolia</i>  | 10"                         | 19'    | 17'    | Black Partridge Woods, Cook County, Illinois. Kendall Laughlin, Chicago.               |
| Roughleaf, <i>Cornus asperifolia</i>  | 11"                         | 9'9"   | 16'    | Swope Park, Kansas City, Missouri. Kendall Laughlin, Chicago.                          |
| <b>ELDER</b><br>Blueberry, <i>Sambucus cerulea</i>                                      | 8'5"                        | —      | —      | Near San Rafael, California. Philip C. Knapp, San Francisco.                           |
| Pacific Red, <i>Sambucus callicarpa</i>   | 2'5"                        | —      | —      | On Shoalwater Bay, Pacific County, Washington. Oliver V. Matthews, Salem, Ore.         |
| <b>ELM</b><br>American, <i>Ulmus americana</i>  | 30'3"                       | 147'   | 97'    | Wethersfield, Connecticut. Austin F. Hawes, Hartford.                                  |
| Rock, <i>Ulmus thomasi</i>  | 16'6"                       | 108'   | 65'    | LeClaire, Iowa. F. G. Meyer, Le Claire.  |
| September, or Red, <i>Ulmus serotina</i>  | 5'11"                       | 42'    | 65'    | Glenwood, Arkansas. Kendall Laughlin, Chicago.   |
| Slippery, <i>Ulmus fulva</i>  | 15'5"                       | 65'    | 70'    | Near Willoughby, Ohio. C. M. Shipman, Willoughby.                                      |
| Winged, <i>Ulmus alata</i>  | 14'6"                       | —      | 105'   | Madison County, Alabama. Thomas Z. Atkeson, Jr., Washington, D. C.                     |
| <b>EUONYMUS</b><br>Eastern Wahoo, or Eastern Burningbush, <i>Euonymus atropurpureus</i> | 1'                          | 20'    | 22'    | Turkey Run State Park, Indiana. Kendall Laughlin, Chicago.                             |
| <b>FIG</b> , Florida Strangler, <i>Ficus aurea</i>                                      | 16'                         | 50'    | 60'    | Matheson Hammock, Florida. Devereux Butcher, Washington, D. C.                         |
| <b>FIR</b><br>Balsam, <i>Abies balsamea</i>   | 9'7"                        | 41'    | 75'    | Pocomoke City, Maryland. William L. Dennis (Deceased).                                 |
| Bigcone Douglas-, or Bigcone Spruce, <i>Pseudotsuga macrocarpa</i>                      | 21'7"                       | 100'   | 173'5" | Angeles National Forest, California. W. I. Hutchinson, San Francisco.                  |
| Cascades, or Pacific Silver, <i>Abies amabilis</i>                                      | 16'6"                       | —      | —      | Columbia National Forest, Washington. Oliver V. Matthews, Salem.                       |
| C. Douglas, <i>Pseudotsuga taxifolia</i>  | 53'4"                       | —      | 221'   | Olympic National Park, Washington. Preston P. Macy, Olympic National Park.             |
| Grand, <i>Abies grandis</i>   | 20'7"                       | —      | —      | On Wolf Creek Highway, Clatsop County, Oregon. Oliver V. Matthews, Salem.              |
| Noble, <i>Abies procera</i>   | 18'9"                       | —      | 215'   | Palmer, Oregon. T. J. Carlson, Corvallis.  |
| Red, <i>Abies magnifica</i>   | 25'3"                       | —      | 168'   | Lassen Volcanic National Park, California. J. V. Lloyd, Lassen Volcanic National Park. |



| Species   | Circumference<br>at 4½ feet | Spread | Height | Location of Tree and Nominator   |
|---|-----------------------------|--------|--------|--|
| <b>FIR—Continued</b>  |                             |        |        |  |
| Shasta Red, <i>Abies shastensis</i>                           | 19'6"                       | ---    | 174'   | Lassen National Forest, California. T. J. Carlson, Corvallis, Ore.                     |
| Silver, <i>Abies alba</i>                                     | 5'3"                        | ---    | ---    | Wenatchee National Forest, Washington. T. J. Carlson, Corvallis, Ore.                  |
| White, <i>Abies concolor</i>                                  | 20'7"                       | ---    | 156'   | Lassen Volcanic National Park, California. J. V. Lloyd, Lassen Volcanic National Park. |
| <b>FRINGETREE</b>   |                             |        |        |  |
| White, or Flowering Ash, <i>Chionanthus virginicus</i>        | 2'6"                        | 20'    | 20'    | Princess Anne, Maryland. F. W. Besley, Baltimore.                                      |
| <b>HACKBERRY</b>  |                             |        |        |  |
| Common, <i>Celtis occidentalis</i>                            | 14'5"                       | 65'    | 85'    | Near Pemberville, Ohio. O. E. Files, Toledo.   |
| Douglas, or Western, <i>Celtis douglasi</i>                   | 4'3½"                       | ---    | ---    | Portland, Oregon. Oliver V. Matthews, Salem.   |
| Sugar, or Sugarberry, <i>Celtis laevigata</i>                 | 15'3"                       | 90'    | 60'    | Florence, Alabama. Robert A. Campbell, Norris, Tenn.                                   |
| <b>HAWTHORNE</b>  |                             |        |        |  |
| Chicago, <i>Crataegus arduennae</i>                           | 1'9"                        | 26'6"  | 18'    | Swope Park, Kansas City, Missouri. Kendall Laughlin, Chicago.                          |
| Cockspur, <i>Crataegus crusgalli</i>                          | 2'                          | 28'    | 15'    | Cook County Forest Preserve, Illinois. Kendall Laughlin, Chicago.                      |
| <i>Crataegus serrata</i>                                      | 2'                          | 25'    | 23'    | Cook County Forest Preserve, Illinois. Kendall Laughlin, Chicago.                      |
| Dotted, or Dotted Thorn, <i>Crataegus punctata</i>            | 4'10"                       | 39'    | 29'    | Billy Caldwell's Reserve, Chicago, Illinois. Kendall Laughlin, Chicago.                |
| Downy, or Red Haw, <i>Crataegus mollis</i>                    | 4'4"                        | 40'    | 35'    | Swope Park, Kansas City, Missouri. Kendall Laughlin, Chicago.                          |
| Hills, <i>Crataegus hillii</i>                                | 6'                          | 46'    | 35'    | Morton Arboretum, Lisle, Illinois. Kendall Laughlin, Chicago.                          |
| Pear, or Pear Haw, <i>Crataegus calpodendron</i>              | 1'1"                        | 19'    | 20'    | Cook County Forest Preserve, Illinois. Kendall Laughlin, Chicago.                      |
| Washington, <i>Crataegus phaenopyrum</i>                      | 2'9"                        | 23'    | 25'    | Near Burnt Mills, Maryland. F. W. Besley, Baltimore.                                   |
| <b>HEMLOCK</b>  |                             |        |        |  |
| Canada, or Eastern Hemlock, <i>Tsuga canadensis</i>           | 17'9"                       | ---    | ---    | Great Smoky Mountains National Park, Tennessee. Dr. Stanley A. Cain, Knoxville.        |
| Mountain, <i>Tsuga mertensiana</i>                            | 20'10"                      | ---    | 94'    | Lassen Volcanic National Park, California. J. V. Lloyd, Lassen Volcanic National Park. |
| Pacific, or Western Hemlock, <i>Tsuga heterophylla</i>        | 18'8"                       | ---    | 187'   | Near South Bend, Washington. E. T. Hazeltine, South Bend.                              |
| <b>HICKORY</b>  |                             |        |        |  |
| Arkansas Black, <i>Carya texana arkansana</i>                 | 5'1"                        | 32'    | 64'    | Hot Springs National Park, Arkansas. Kendall Laughlin, Chicago.                        |
| Bitternut, <i>Carya cordiformis</i>                           | 11'4"                       | 73'    | 82'    | Stevenson, Maryland. F. W. Besley, Baltimore.  |
| Mockernut, <i>Carya tomentosa</i>                             | 11'9"                       | 81'    | 86'    | Near Loch Raven, Maryland. F. W. Besley, Baltimore.                                    |
| Pignut, <i>Carya glabra</i>                                   | 14'9"                       | ---    | ---    | Near Crosswicks, New Jersey. H. Gleason Mattoon, Philadelphia.                         |
| Red, <i>Carya ovalis</i>                                      | 13'4"                       | 45'    | 145'   | Norris Reservoir, Tennessee. Keith D. Lange, Norris.                                   |
| Shagbark, <i>Carya ovata</i>                                  | 10'6"                       | 60'    | 68'    | Avon, Connecticut. Allen B. Cook, Hartford.  |
| Shellbark, <i>Carya laciniosa</i>                             | 12'7"                       | 64'    | 145'   | Big Oak Tree State Park, Missouri. Kendall Laughlin, Chicago.                          |
| <b>HOLLY, American, <i>Ilex opaca</i></b>                     | 11'                         | ---    | 50'    | Hog Island, Virginia. C. E. Randall, Washington, D. C.                                 |
| <b>HOPHORNBEAM</b>  |                             |        |        |  |
| American, or Eastern, <i>Ostrya virginiana</i>                | 6'9"                        | 52'    | 52'    | Near Cornwall, Connecticut. Raymond Kienholz, Hartford.                                |
| <b>HORNBEAM</b>   |                             |        |        |  |
| American, or Blue Beech, <i>Carpinus caroliniana</i>          | 5'                          | 59'    | 41'    | Near Princess Anne, Maryland. F. W. Besley, Baltimore.                                 |
| <b>JUNIPER</b>  |                             |        |        |  |
| Alligator, <i>Juniperus pachyphloea</i>                       | 19'11"                      | 70'    | 71'    | Coronado National Forest, New Mexico. Rex King, Albuquerque.                           |
| Common, <i>Juniperus communis</i>                             | 9'                          | 3'     | 12'    | Dunes State Park, Indiana. Kendall Laughlin, Chicago.                                  |
| Rocky Mountain, or Utah, <i>Juniperus scopulorum</i>          | 26'8" (Base)                | ---    | 44'6"  | Cache National Forest, Utah. R. P. McLaughlin, Logan.                                  |
| Sierra, <i>Juniperus occidentalis</i>                         | 40'11"                      | ---    | 80'    | Stanislaus National Forest, California. J. R. Hall, Sonora.                            |
| <b>LARCH</b>  |                             |        |        |  |
| Eastern, or Tamarack, <i>Larix laricina</i>                   | 9'8"                        | 75'    | 90'    | Tamworth, New Hampshire. Charles H. Porter, Tamworth.                                  |
| Western, <i>Larix occidentalis</i>                            | 24'                         | ---    | 120'   | Near Kootenai National Forest, Montana. Elers Koch, Missoula.                          |
| <b>LAUREL</b>   |                             |        |        |  |
| California, or Oregon Myrtle, <i>Umbellularia californica</i> | 36'9"                       | ---    | ---    | Near Elanor, Humboldt County, California. T. J. Carlson, Corvallis, Ore.               |

| Species  | Circumference<br>at 4½ feet | Spread | Height | Location of Tree and Nominator  |
|--|-----------------------------|--------|--------|---|
| <b>LINDEN: Basswood</b>  |                             |        |        |   |
| American, or Smooth Basswood, <i>Tilia americana</i>               | 14'1"                       | 89'    | 75'    | Queenstown, Maryland. F. W. Besley, Baltimore.                                  |
| Beetree, or White Basswood, <i>Tilia heterophylla</i>              | 17'3"                       | —      | —      | Near Coldwell Corners, Delaware. William S. Taber, Dover.                       |
| Carolina, or Carolina Basswood, <i>Tilia caroliniana rhoophila</i> | 7'1"                        | 47'    | 122'   | Glenwood, Arkansas. Kendall Laughlin, Chicago.                                  |
| Palmer, <i>Tilia palmeri</i>                                       | 7'4"                        | 44'    | 61'    | Scarritt Point, Kansas City, Missouri. Kendall Laughlin, Chicago.               |
| <b>LOCUST</b>  |                             |        |        |   |
| Black, <i>Robinia pseudoacacia</i>                                 | 15'                         | 50'    | 75'    | Salisbury, Connecticut. Allen B. Cook, Hartford.                                |
| Common Honey, <i>Gleditsia triacanthos</i>                         | 16'                         | 125'   | 88'    | Near Queenstown, Maryland. F. W. Besley, Baltimore.                             |
| Roseacacia, <i>Robinia hispida</i>                                 | 9'10"                       | —      | —      | Lawrenceville, New Jersey. C. W. Schisler, Trenton.                             |
| Water, or Swamp, <i>Gleditsia aquatica</i>                         | 8'4"                        | —      | —      | Lawrenceville, New Jersey. C. W. Schisler, Trenton.                             |
| <b>LYSILOMA</b>  |                             |        |        |   |
| Bahama, or Wild Tamarind, <i>Lysiloma bahamensis</i>               | 8'                          | —      | —      | Key Largo, Florida. Charles C. Deam, Bluffton, Ind.                             |
| <b>MADRONE, Pacific, <i>Arbutus menziesi</i></b>                   | 31'4"                       | —      | 100'   | Near San Francisco, California. John V. Young, San Jose.                        |
| <b>MAGNOLIA</b>  |                             |        |        |   |
| Bigleaf, <i>Magnolia macrophylla</i>                               | 5'9"                        | 33'    | 65'    | Baltimore, Maryland. F. W. Besley, Baltimore.                                   |
| Cucumbertree, <i>Magnolia acuminata</i>                            | 18'                         | —      | —      | Great Smoky Mountains National Park, Tennessee. Dr. Stanley A. Cain, Knoxville. |
| Fraser, or Mountain, <i>Magnolia fraseri</i>                       | 6'3"                        | 51'    | 55'    | Baltimore, Maryland. F. W. Besley, Baltimore.                                   |
| Southern, or Large Flowered, <i>Magnolia grandiflora</i>           | 14'4"                       | —      | 110'   | Near Brooksville, Florida. Lisa von Borowsky, Brooksville.                      |
| Sweetbay, or Swamp, <i>Magnolia virginiana</i>                     | 3'3"                        | 26'    | 38'    | Near Joppa, Maryland. F. W. Besley, Baltimore.                                  |
| Umbrella, <i>Magnolia tripetala</i>                                | 4'3"                        | —      | —      | Lawrenceville, New Jersey. C. W. Schisler, Trenton.                             |
| <b>MANZANITA</b>   |                             |        |        |   |
| Whiteleaf, <i>Arctostaphylos viscida</i>                           | 7'3½"                       | 24'    | 21'    | Lassen National Forest, California. Clyde W. Lewis, Stirling City.              |
| <b>MAPLE</b>   |                             |        |        |   |
| Bigleaf, <i>Acer macrophyllum</i>                                  | 28'                         | 66'    | —      | Near Haydens Bridge, Lane County, Oregon. Oliver V. Matthews, Salem.            |
| Black, <i>Acer nigrum</i>  | 9'1"                        | 72'    | 68'    | Turkey Run State Park, Indiana. Kendall Laughlin, Chicago.                      |
| Chalk, or Whitebark, <i>Acer leucoderme</i>                        | 11"                         | 12'    | 15'    | Ouachita National Forest, Arkansas. Kendall Laughlin, Chicago.                  |
| Douglas Rocky Mountain, <i>Acer glabrum douglasii</i>              | 5'6"                        | 20'    | 50'    | Birch Bay, Washington. Oliver V. Matthews, Salem.                               |
| Red, <i>Acer rubrum</i>  | 15'6"                       | 80'    | 50'    | Susquehanna, Pennsylvania. Dr. Fred Brush, Susquehanna.                         |
| Striped, or Moosewood, <i>Acer pennsylvanicum</i>                  | 2'½"                        | —      | —      | Mt. Cardigan, Alexandria, New Hampshire.  |
| Silver, <i>Acer saccharinum</i>                                    | 22'10"                      | 110'   | 90'    | Miss Elisabeth G. Weeks, Providence, R. I.                                      |
| Sugar, <i>Acer saccharum</i>                                       | 17'6"                       | 75'    | 110'   | Harbor, Maine. John D. Kendig, Manheim, Penn.                                   |
| Vine, <i>Acer circinatum</i>                                       | 3'5"                        | —      | —      | Bethany, West Virginia. Stephen Spurr, Morgantown.                              |
| <b>MESQUITE</b>  |                             |        |        |   |
| Common, or Great, <i>Prosopis chilensis</i>                        | 11'6"                       | 58'8"  | 33'6"  | Near Tucson, Arizona. Frederic W. Taylor, Los Angeles, Calif.                   |
| Honey, <i>Prosopis glandulosa</i>                                  | 10'9½"                      | 65'    | 60'    | Near Gatesville, Texas. Weldon D. Woodson, Los Angeles, Calif.                  |
| <b>MOUNTAINMAHOGANY</b>  |                             |        |        |   |
| Curlleaf, <i>Cercocarpus ledifolius</i>                            | 10'7"                       | 67'    | 24'    | Nevada National Forest, Nevada. S. D. Warner, Baker.                            |
| <b>MULBERRY</b>  |                             |        |        |   |
| Black, <i>Morus nigra</i>  | 13'3"                       | 74'    | 65'    | Near Easton, Maryland. F. W. Besley, Baltimore.                                 |
| Red, <i>Morus rubra</i>  | 7'6"                        | 62'    | 42'    | Near Bethlehem, Maryland. F. W. Besley, Baltimore.                              |
| White, <i>Morus alba</i>   | 14'7"                       | 83'    | 57'    | Perryville, Maryland. F. W. Besley, Baltimore.                                  |
| <b>OAK</b>   |                             |        |        |   |
| Black, <i>Quercus velutina</i>                                     | 24'9"                       | —      | 60'    | Millbrook, New York. H. F. Hedgecock, Poughkeepsie.                             |
| Missouri Black, <i>Quercus velutina missouriensis</i>              | 5'5"                        | 48'    | 48'    | Swope Park, Kansas City, Missouri. Kendall Laughlin, Chicago.                   |
| California Black, <i>Quercus kelloggii</i>                         | 32'10"                      | —      | 80'    | Near Marial, Oregon. T. J. Carlson, Corvallis.                                  |
| Blackjack, <i>Quercus marilandica</i>                              | 7'4"                        | 53'    | 46'    | Near Chillum, Maryland. F. W. Besley, Baltimore.                                |
| Bur, <i>Quercus macrocarpa</i>                                     | 23'8"                       | 95'6"  | 124'   | Warsaw, Indiana. H. A. Woods, Indianapolis.                                     |
| Chestnut, <i>Quercus montana</i>                                   | 19'10"                      | 136'   | 98'    | Near Easton, Maryland. F. W. Besley, Baltimore.                                 |

| Species   | Circumference<br>at 4½ feet | Spread | Height | Location of Tree and Nominator   |
|---|-----------------------------|--------|--------|--|
| <b>OAK—Continued</b>  |                             |        |        |  |
| Chinkapin, <i>Quercus muehlenbergi</i>                        | 14'1"                       | —      | —      | New Burlington, Ohio. John Pickin, Dayton.                                   |
| Dwarf Chinkapin, <i>Quercus prinoides</i>                     | 10"                         | 13'    | 11'    | Swope Park, Kansas City, Missouri. Kendall Laughlin, Chicago.                |
| Laurel, <i>Quercus laurifolia</i>                             | 24'                         | —      | —      | Highland Hammock, Florida. William F. Jacobs, Tallahassee.                   |
| Live, <i>Quercus virginiana</i>                               | 35'                         | 168'   | 178'   | Near Hahnville, Louisiana. Charles Genella, New Orleans.                     |
| California Live, or Coast Live, <i>Quercus agrifolia</i>      | 38'                         | 123'   | 88'    | Gilroy, California. Woodbridge Metcalf, Berkeley.                            |
| Canyon Live, <i>Quercus chrysolepis</i>                       | 36'3"                       | 130'   | 60'    | Angeles National Forest, California. G. Armstrong, Los Angeles.              |
| Northern Pin, or Jack, <i>Quercus ellipsoidalis</i>           | 10'                         | 63'    | 48'    | Dunes Park, Illinois. Kendall Laughlin, Chicago.                             |
| Overcup, <i>Quercus lyrata</i>                                | 14'10"                      | —      | 75'    | Bowie, Maryland. L. C. Morley, Bowie.  |
| Pin, <i>Quercus palustris</i>                                 | 18'2"                       | —      | —      | Lawrenceville, New Jersey. C. W. Schisler, Trenton.                          |
| Post, <i>Quercus stellata</i>                                 | 13'9"                       | 103'   | 80'    | Charlotte County, Virginia. F. C. Pederson, (Deceased).                      |
| Eastern Red, <i>Quercus borealis maxima</i>                   | 23'3"                       | 100'   | 80'    | Near West Ashford, Connecticut. Edgar L. Heermance, New Haven.               |
| Northern Red, <i>Quercus borealis</i>                         | 18'6"                       | 136'   | 90'    | Lloyds Neck, Long Island, New York. Mrs. George H. Savage, Huntington, L. I. |
| Southern Red, <i>Quercus falcata</i>                          | 23'5"                       | 129'   | 105'   | Near Sudley, Maryland. F. W. Besley, Baltimore.                              |
| Swamp Red, <i>Quercus falcata pagodaefolia</i>                | 11'10"                      | —      | —      | Big Oak Tree State Park, Missouri. Kendall Laughlin, Chicago.                |
| Scarlet, <i>Quercus coccinea</i>                              | 11'9"                       | 78'    | 88'    | Forest Hill, Maryland. F. W. Besley, Baltimore.                              |
| Shingle, <i>Quercus imbricaria</i>                            | 12'6"                       | 83'9"  | 71'3"  | Montgomery County, Maryland. Harold B. Stabler, Washington, D. C.            |
| Shumard, or Shumard Red, <i>Quercus shumardi</i>              | 12'5"                       | 76'    | 92'    | Glenwood, Arkansas. Kendall Laughlin, Chicago.                               |
| Swamp Chestnut, or Basket, <i>Quercus prinus</i>              | 30'2½"                      | —      | 110'   | Near Sandhill, Mississippi. Z. Waters White, Wilmar, Ark.                    |
| Tan, or Tanbark, <i>Lithocarpus densiflorus</i>               | 18'4"                       | —      | —      | Mount Tamalpais, California. R. H. Menzies, San Francisco.                   |
| Turkey, <i>Quercus laevis</i>                                 | 7'9"                        | 55'    | 54'    | Maxwell's Point, Maryland. F. W. Besley, Baltimore.                          |
| Water, <i>Quercus nigra</i>                                   | 18'10"                      | —      | —      | Allendale County, South Carolina. Cleary M. Haithcock, Badin.                |
| White, <i>Quercus alba</i>                                    | 27'8"                       | 165'   | 95'    | Wye Mills, Maryland. F. W. Besley, Baltimore.                                |
| California White, or California Valley, <i>Quercus lobata</i> | 28'3"                       | 153'   | 96'    | Chico, California. Lloyd G. Ingles, Chico.                                   |
| Oregon White, <i>Quercus garryana</i>                         | 25'6"                       | —      | 120'   | Near Mendocino National Forest, California. H. G. Abbott, Orono, Me.         |
| Swamp White, <i>Quercus bicolor</i>                           | 16'4"                       | —      | —      | McConnellsburg, Pennsylvania. Merrill W. Nace, McConnellsburg.               |
| Utah White, or Gambel, <i>Quercus utahensis</i>               | 15'8"                       | —      | 45'    | Deep Creek, Utah. R. P. McLaughlin, Logan.                                   |
| Willow, <i>Quercus phellos</i>                                | 21'10"                      | —      | 105'   | Near Pelzer, South Carolina. Norman Armstrong, White Plains, N. Y.           |
| OSAGEORANGE, <i>Maclura pomifera</i>                          | 17'11"                      | 78'    | 65'    | Near Carmichael, Maryland. F. W. Besley, Baltimore.                          |
| PAPAW, Common, <i>Asimina triloba</i>                         | 1'11"                       | 20'    | 27'    | Hot Springs National Park, Arkansas. Kendall Laughlin, Chicago.              |
| PECAN, <i>Carya illinoensis</i>                               | 21'4"                       | 145'   | 135'   | Assumption Parish, Louisiana. Sam Mims, Baton Rouge.                         |
| PERSIMMON, Common, <i>Diospyros virginiana</i>                | 8'1"                        | 49'    | 59'    | Auburn, Kentucky. Louis Liedman, Russellville.                               |
| <b>PLUM</b>   |                             |        |        |  |
| American, <i>Prunus americana</i>                             | 2'                          | —      | —      | Ouachita National Forest, Arkansas. Kendall Laughlin, Chicago.               |
| Inch, <i>Prunus lanata</i>                                    | 1'4"                        | —      | —      | Ouachita National Forest, Arkansas. Kendall Laughlin, Chicago.               |
| <b>PINE</b>   |                             |        |        |  |
| Bristlecone, <i>Pinus aristata</i>                            | 21'                         | —      | —      | Cedar Breaks National Monument, Utah. Russell K. Grater, Springdale.         |
| Colorado Pinyon, <i>Pinus cembroides edulis</i>               | 11'3"                       | 23'    | 33'    | La Sal National Forest, Utah. Owen DeSpain, Moab.                            |
| Jeffrey, <i>Pinus jeffreyi</i>                                | 25'1"                       | —      | 130'   | Near Idyllwild, Mt. San Jacinto, California. Richard H. May, Riverside.      |
| Knobcone, <i>Pinus attenuata</i>                              | 9'1"                        | —      | —      | Rogue River National Forest, Oregon. Oliver V. Matthews, Salem.              |
| Limber, <i>Pinus flexilis</i>                                 | 24'5"                       | 50'    | 44'    | Cache National Forest, Utah. Wilford D. Porter, Logan.                       |
| Loblolly, <i>Pinus taeda</i>                                  | 16'7"                       | 105'   | 84'    | Near Carmichael, Maryland. F. W. Besley, Baltimore.                          |
| Lodgepole, <i>Pinus contorta latifolia</i>                    | 19'                         | —      | 106'   | Sierra National Forest, California. Harold S. Coons, Northfork.              |
| Pitch, <i>Pinus rigida</i>                                    | 7'8"                        | —      | —      | Sumter National Forest, South Carolina. C. A. Rowland, Jr., Gainesville, Ga. |



| Species   | Circumference<br>at 4½ feet | Spread | Height | Location of Tree and Nominator   |
|---|-----------------------------|--------|--------|--|
| <b>PINE—Continued</b>   |                             |        |        |  |
| Pond, <i>Pinus rigida serotina</i>  | 5'5"                        | 32'    | 79'    | Doncaster State Forest, Maryland. F. W. Besley, Baltimore.   |
| Ponderosa, <i>Pinus ponderosa</i>   | 27'1"                       | —      | 162'   | Near Lapine, Oregon. Donald F. McKay, Portland.  |
| Shore, <i>Pinus contorta</i>  | 14'2" (at 1')               | —      | —      | U. S. Highway 101, Coos-Curry Line, Oregon. Oliver V. Matthews, Salem.                             |
| Shortleaf, <i>Pinus echinata</i>  | 10'                         | —      | 135'   | Morganton, North Carolina. R. W. Graeber, Raleigh.   |
| Sugar, <i>Pinus lambertiana</i>   | 31'8"                       | —      | 200'   | Stanislaus National Forest, California. J. R. Hall, Sonora.  |
| Table Mountain, <i>Pinus pungens</i>                                      | 6'10"                       | —      | —      | Chattahoochee National Forest, Georgia. C. A. Rowland, Jr., Gainesville.                           |
| Virginia, <i>Pinus virginiana</i>   | 8'11"                       | 38'    | 58'    | Cedarville State Forest, Maryland. F. W. Besley, Baltimore.  |
| Eastern White, <i>Pinus strobus</i>                                       | 14'8"                       | —      | —      | Near Eveleth, Minnesota. John H. Rowe, Jr., Minneapolis.   |
| Western White, <i>Pinus monticola</i>                                     | 26'5"                       | —      | 207'   | Bovill, Idaho. T. J. Carlson, Corvallis, Ore.  |
| Whitebark, <i>Pinus albicaulis</i>  | 18'2"                       | 60'    | 85'    | Grand Teton National Park, Wyoming. Charles J. Smith, Moose.                                       |
| <b>PLANETREE: Sycamore</b>  |                             |        |        |  |
| American, or Eastern, <i>Platanus occidentalis</i>                        | 42'7"                       | —      | —      | Near Beverly & Waterford, Ohio. H. E. Frye, Lowell.  |
| California, <i>Platanus racemosa</i>                                      | 27'                         | 158'   | 116'   | Near Santa Barbara, California. Maunsell Van Rensselaer, Santa Barbara.                            |
| <b>POPLAR</b>   |                             |        |        |  |
| Balm-of-Gilead, <i>Populus candicans</i>                                  | 4'9"                        | 22'    | 23'    | Dunes Park, Illinois. Kendall Laughlin, Chicago.   |
| Eastern, or Eastern cottonwood, <i>Populus deltoides</i>                  | 30'                         | —      | 90'    | Fort Kearney, Nebraska. V. W. Binderup, Minden.  |
| Pacific, or Northern black cottonwood, <i>Populus trichocarpa hastata</i> | 25'                         | —      | —      | Near Corvallis, Oregon. T. J. Carlson, Corvallis.  |
| Plains, or Plains cottonwood, <i>Populus sargentii</i>                    | 29'8"                       | 70'    | 55'    | Near Thermopolis, Wyoming. O. F. Ludtke, Thermopolis.  |
| RioGrande, or RioGrande Cottonwood, <i>Populus wislizeni</i>              | 25'2"                       | 108'   | 72'    | Moab, Utah. Owen DeSpain, Moab.  |
| Southern, or Balsam, <i>Populus deltoides missouriensis</i>               | 21'7"                       | 115'   | 124'   | Near Geneva, New York. O. E. Files, Toledo, Ohio.  |
| Weeping Silver, <i>Populus canescens</i>                                  | 21'3"                       | 90'    | 95'    | Near Florida, Ohio. O. E. Files, Toledo.   |
| <b>REDBUD</b>   |                             |        |        |  |
| Eastern, <i>Cercis canadensis</i>   | 8'                          | 40'    | —      | Near North Kingsfield, Ohio. Newton G. Armstrong, Cleveland.                                       |
| <b>REDWOOD, <i>Sequoia sempervirens</i></b>                               |                             |        |        |  |
|   | 62'8"                       | —      | 308'   | Humboldt County, California. Emanuel Fritz, Berkeley.  |
| <b>SASSAFRAS, <i>Sassafras varifolium</i></b>                             |                             |        |        |  |
|   | 15'2"                       | —      | —      | South of Rio Grande, Cape County, New Jersey. Department of Conservation and Development, Trenton. |
| <b>SERVICEBERRY</b>   |                             |        |        |  |
| Pacific, or Western, <i>Amelanchier florida</i>                           | 2'9"                        | —      | —      | Near Lyons, Oregon. Oliver V. Matthews, Salem.   |
| Shadblow, or Shadbush, <i>Amelanchier canadensis</i>                      | 7'                          | 43'    | 50'    | Near Unadilla, Michigan. Shirley W. Allen, Ann Arbor.  |
| <b>SEQUOIA, <i>Sequoia gigantea</i></b>                                   |                             |        |        |  |
|   | 101'6" (base)               | —      | 272'4" | Sequoia National Park, California. Miss Isabelle F. Story, Chicago.                                |
| <b>SILVERBELL, Mountain, <i>Halesia monticola</i></b>                     |                             |        |        |  |
|   | 11'9"                       | —      | —      | Great Smoky Mountains National Park, Tennessee. Dr. Stanley A. Cain, Knoxville.                    |
| <b>SOURWOOD, <i>Oxydendrum arboreum</i></b>                               |                             |        |        |  |
|   | 5'4"                        | 15'    | 80'    | Pisgah National Forest, North Carolina. W. H. Ogden and A. M. Williams, Jr., Asheville.            |
| <b>SPRUCE</b>   |                             |        |        |  |
| Brewer, <i>Picea breweriana</i>   | 12'2"                       | —      | —      | Near Miller Lake, Oregon. Oliver V. Matthews, Salem.   |
| Colorado, or Blue, <i>Picea pungens</i>                                   | 11'9"                       | —      | 123'   | Gunnison National Forest, Colorado. Fred R. Johnson, Denver.                                       |
| Engelmann, <i>Picea engelmanni</i>  | 19'11"                      | 30'    | 104'   | Cache National Forest, Idaho. Jay B. Hann, Paris.  |
| Red, <i>Picea rubens</i>  | 14'1"                       | —      | 75'    | Great Smoky Mountains National Park, North Carolina. Verne Rhoades, Asheville.                     |
| Sitka, <i>Picea sitchensis</i>  | 50'                         | —      | 150'   | Near Beaver, Washington. T. J. Carlson, Corvallis, Ore.  |
| White, <i>Picea glauca</i>  | 7'7"                        | 35'    | 80'    | Vermillion Lake, St. Louis County, Minnesota. Charles H. Stoddard, Jr., Milwaukee, Wis.            |
| <b>SUMAC, Staghorn, <i>Rhus typhina</i></b>                               |                             |        |        |  |
|   | 1'10"                       | 16'    | 32'    | Dunes State Park, Indiana. Kendall Laughlin, Chicago.  |
| <b>SWEETGUM</b>   |                             |        |        |  |
| American, or Red, <i>Liquidambar styraciflua</i>                          | 21'6"                       | —      | 200'   | Near Florence, South Carolina. H. A. Smith, Gunthersville, Alabama.                                |
| <b>TORREYA</b>  |                             |        |        |  |
| California, or California Nutmeg, <i>Torreya californica</i>              | 14'10"                      | 39'    | 141'   | Near Mendocino, California. Edward Simons, San Francisco.  |

| Species   | Circumference<br>at 4½ feet | Spread | Height | Location of Tree and Nominator                                  |
|---|-----------------------------|--------|--------|---|
| TULIPTREE, or Yellow Poplar, <i>Liriodendron tulipifera</i> | 26'                         | 117'   | 79'    | Annapolis, Maryland. F. W. Besley, Baltimore.                   |
| TUPELO, Black, or Blackgum, <i>Nyssa sylvatica</i>          | 18'2"                       | 98'    | 109'   | White Hall, Maryland. F. W. Besley, Baltimore.                  |
| <b>VIBURNUM</b>   |                             |        |        |   |
| Blackhaw, <i>Viburnum prunifolium</i>                       | 9"                          | 11'    | 19'    | Swope Park, Kansas City, Missouri. Kendall Laughlin, Chicago.   |
| Nannyberry, <i>Viburnum lentago</i>                         | 1'7"                        | 21'    | 26'    | Dunes State Park, Indiana. Kendall Laughlin, Chicago.           |
| Rusty Blackhaw, <i>Viburnum rufidulum</i>                   | 1'4"                        | 19'    | 16'    | Bennett Spring State Park, Missouri. Kendall Laughlin, Chicago. |
| WALNUT, Eastern Black, <i>Juglans nigra</i>                 | 19'9"                       | 135'   | 100'   | Anne Arundel County, Maryland. F. W. Besley, Baltimore.         |
| <b>WILLOW</b>   |                             |        |        |   |
| Black, <i>Salix nigra</i>                                   | 20'8"                       | —      | —      | Lawrenceville, New Jersey. C. W. Schisler, Trenton.             |
| Ward Coastalplain, or Ward, <i>Salix longipes wardi</i>     | 2'11"                       | 25'    | 18'    | Glenwood, Arkansas. Kendall Laughlin, Chicago.                  |
| White, <i>Salix alba</i>                                    | 23'5¼"                      | 75'    | 85'    | Near Winona, Ohio. F. Merrick Semans, Youngstown.               |
| <b>WITCHHAZEL</b>   |                             |        |        |   |
| Common, or Northern, <i>Hamamelis virginiana</i>            | 1'2"                        | 22'    | 20'    | Dunes State Park, Indiana. Kendall Laughlin, Chicago.           |
| YELLOWWOOD, American, <i>Cladrastis lutea</i>               | 12'2"                       | —      | —      | Lawrenceville, New Jersey. C. W. Schisler, Trenton.             |
| YEW, Pacific, or Oregon, <i>Taxus brevifolia</i>            | 12'7"                       | —      | —      | Near Cherry Grove, Oregon. Oliver V. Matthews, Salem.           |

## Australia's Timber War

(From page 12)

calyptus bark carried by the wind have actually been known to start new spot fires fifty miles ahead of the main blaze.

If there was no stopping these big fires then the safety of the forests must depend on ceaseless effort to prevent their starting, combined with split-second action to squelch those that do break out before they gain headway. Lawrence set out to provide such protection, but it was a large order, for scores of fire pumps and portable radios, miles of canvas hose and countless other items were needed, while lookout towers, fire-breaks and access roads should be built. In spite of manpower and material shortages, he was given the fullest possible cooperation. Factories had to get uninterrupted supplies of timber, the air force could not afford to have airports and aircraft warning stations blacked out with a smoke pall, nor could the army spare men for weeks of large fire fighting.

Fortunately, a fine backlog of experienced men already were in the field, and during the lean years of public apathy they had laid extensive plans for the day when modernization could begin. In 1938, W. W. Gay, one of the three commissioners heading Victoria's forestry program, had spent a season in the United States studying fire control as well as forest plantation work, and his reports were a great help. The Royal Australian Air Force made planes avail-

able for fire spotting and moving key personnel to the danger zones in a hurry; Australian troops from training camps were rushed into action the moment a fire showed signs of getting beyond the control of civilian fire fighters, and to prepare them for this, extensive training programs were carried on at army bases with one purpose always uppermost—"get 'em while they're small."

Highly efficient "Bush Fire Brigades" were organized throughout the state and their 3,000 members probably have stopped more potentially disastrous fires in the past five years than has any other fire control agency. The brigades are made up of volunteers grouped into over 700 units in communities bordering the Victorian foothills. Their purpose is to protect their own homes, paddocks and bushland, but no one can be an isolationist when flames are licking over the next hilltop, so the volunteers fight side by side with the Crown land firemen on every blaze within range of their equipment. The brigades are sponsored by the Forests Commission which furnishes a small staff of officers. Substantial grants of money for equipment are made by the state each year, but on a "pound-for-pound" basis, the communities being required to raise an equivalent amount themselves for fire-fighting equipment.

Slowly the fortunes of Australian forestry turned under this coordinated pro-

gram. After three years, instead of the greatly feared decline the annual sawn timber production in Victoria was almost double the prewar figure. Fire losses have been extremely low and the bush workers can take their families onto the job now without fearing for their lives.

Meanwhile, down in Melbourne in a large brick building beside the Yarra River, a group of scientists was doing work less spectacular than the woodsmen's—but as important to winning the war. They were the 200 research men and women of the Commonwealth Forests Products Laboratory—an establishment similar to the U. S. Forest Service's famous laboratory at Madison, Wisconsin. Much of their work is on the war secrets list, but among the published accomplishments are highly successful developments in the plywood and improved wood field that have made wooden aircraft fly faster and with greater safety. In another division, Australian woods have been placed under countless tests to find which are most practical to substitute for American pine, Douglasfir and cedar, and the results have been passed on in handbooks for use by contractors and army engineers.

An especially important and difficult project at the laboratory was the classification of some 320 different woods native to New Guinea. As our troops

(Turn to page 45)



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## Earle H. Clapp Retires From Forest Service

EARLE H. Clapp, one of the nation's foremost conservation leaders, has retired from active duty after nearly forty years of government service. Associate chief of the U. S. Forest Service since 1935, Mr. Clapp served as acting chief following the death of F. A. Silcox in 1939, until the appointment of Lyle F. Watts as chief forester early in 1943.

In announcing Mr. Clapp's retirement, Mr. Watts recalled the great crusade for forest conservation under Gifford Pinchot, that resulted in the establishment of the national forests and their administration in the Department of Agriculture. He then paid tribute to Mr. Clapp as a leader in what he said has become a second crusade—"to stop forest depletion and bring about full development and wise use of all forest land, whether public or private."

An ardent exponent of the philosophy that strong government leadership and action are needed to assure the nation an adequate and uninterrupted supply of forest products and to develop and safeguard watershed, recreational and other values inherent in the forests, Mr. Clapp has consistently been in the forefront of the movement for greater public ownership of forest land and for broad federal regulatory powers over the cutting of privately owned forests. Building on the foundation that he had laid years earlier in several comprehensive analyses, notably the "National Plan for American Forestry," commonly referred to as the Copeland Report, Mr. Clapp, in 1940, recommended a comprehensive program of forestry to the Joint Congressional Committee on Forestry. In this he embodied three proposals advocated by his predecessor, Mr. Silcox, namely: extension of federal forest ownership, regulation of cutting, and other practices on private forest land and additional aids to private forest owners.

His advocacy of greatly enlarged public ownership and federal participation in forest regulation aroused widespread opposition from the forest industries and from those who felt that regulation

should be left entirely to the states.

Mr. Clapp has been largely responsible for raising forest research from obscurity to a vital place in American forestry. When in 1915 he became assistant chief in charge of forest research, that activity included a limited amount of wood utilization research and scattered effort on field problems of local interest. Recognizing that forestry needed a strong technical basis if maximum production and wise use of the forest resources were to be achieved, he led the movement that culminated in the establishment of a series of regional forest experiment stations and the expansion of the now world-famous Forest Products Laboratory at Madison, Wisconsin.

With the outbreak of war, the Forest Service was called upon to undertake numerous emergency activities. War agencies looked to the Service for a wide range of information dealing with forests and forest

products. Mr. Clapp, with his characteristic vigor, marshalled unsparingly the Service's personnel and facilities to the tasks imposed by the war. Yet he stood firmly by the principle that while production for war was paramount, forest productivity should not be unnecessarily impaired.

Mr. Clapp's career has been particularly impressive because of the breadth of his interest and vision, the recognition he gained for a scientific approach to conservation problems, the high standards of professional attainment upon which he insisted, and his indefatigable devotion to his ideal of public service. He has exerted a great and lasting influence upon American forestry in its broadest sense.

Mr. Clapp was born at North Rush, New York, in 1877. He attended Cornell for two years, and was graduated from the University of Michigan in 1905 with an A.B. in forestry. In 1928, the University of Michigan conferred on him the honorary degree of Doctor of Laws. He has been a fellow of the Society of American Foresters since 1930.



Earle H. Clapp

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1-45

## Killing Deer

(From page 15)

of them in the East, where the whitetail deer have been fed, follow the same pattern in results. Deer cannot be fed a sustaining ration of artificial feeds, such as we now can secure on the market, and remain in good condition. Many—very many—will die.

The feeding of deer, except in the most extreme and critical periods, and then only for a short time, is costly, unsound and actually destructive.

There are two suggestions that might be stressed. First, deer herds should not be enticed into limited areas around feed grounds and held there until native browse in the immediate vicinity is killed. Even though deer may have to work, travel distances, and may become lean in hunting natural foods, they are better off than deer living for a length of time on artificial feeds.

The other part of good management is keeping the herd in balance with natural feeds available. If the deer population begins to exceed the carrying capacity of the native foods, then, to avoid starvation and to protect the native shrubs, a hunting harvest must be made. The huntsman actually is a servant of good wildlife management in such a situation. It is far more humane to have hunters remove the surplus, realize the values afforded, than allow a deer herd to increase, to die of outright starvation—or if feeding is done, to kill the animals by offering foods not suited to their needs.

If buying hay to feed deer in the dead of winter would save them, the writer would put in his share—either out of pocket or through state game funds. If there were any economical way of supplementing common stock feeds so they could be eaten by deer without dire results, an answer would be found. But so far there isn't a good supplement at hand. Feeding hay to deer over a period in the winter, kills them—and costs money.

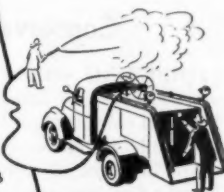
The expression "killing by kindness" is a much used metaphor. Generally it is used figuratively. When it applies to winter feeding of deer, it becomes a deadly fact. So, the next time you feel that natural impulse to demand that feed be hauled out to deer in the snow, don't let the impulse govern. You'll be doing a greater kindness to the deer if you restrain it entirely.

### ANOTHER CCC?

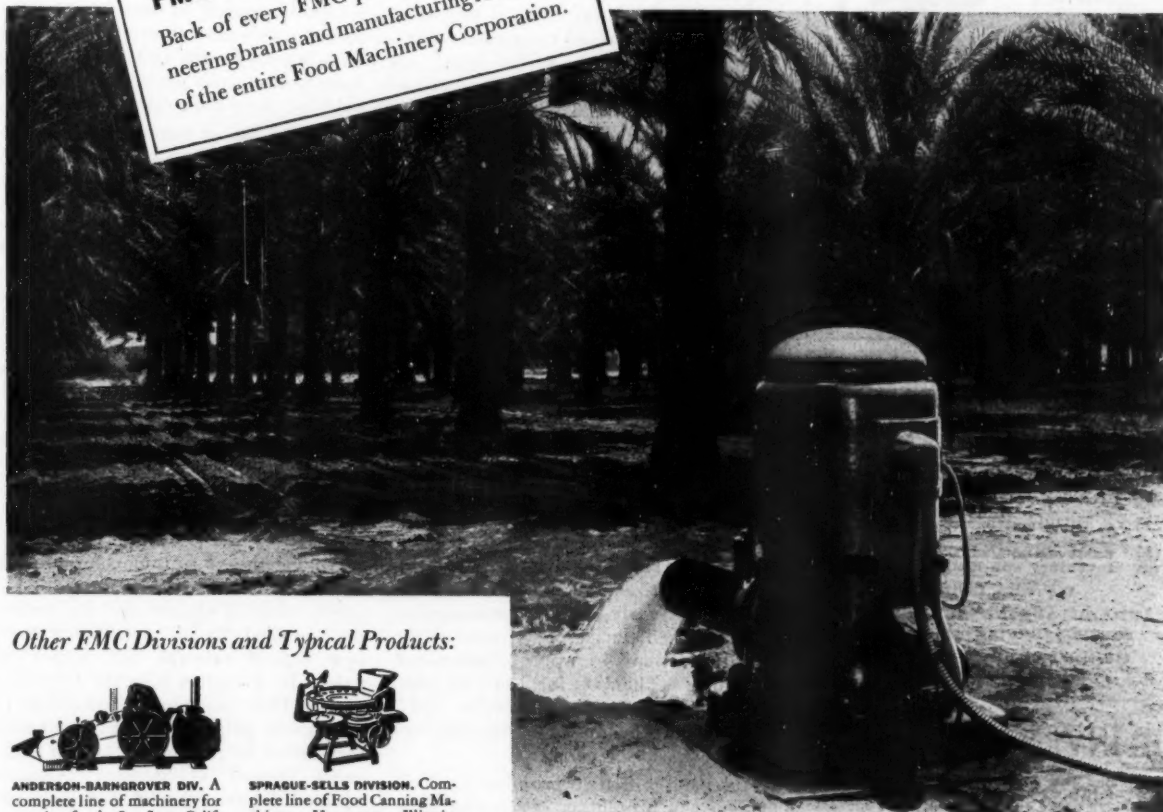
"In the future, we should again have something similar to the Civilian Conservation Corps, in which youths of the country can receive valuable training in the great outdoors," says Secretary of Agriculture Claude R. Wickard.



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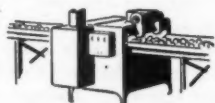
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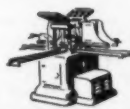
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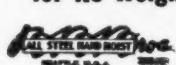


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## BUY WAR BONDS

## Conservation Box Score in the 78th Congress

COMPETING with a full calendar of war emergency legislation, some one hundred conservation bills introduced in the 78th Congress registered a good score in point of numbers passed during the two-year session. Excluding appropriations and purely local measures, about twenty received congressional approval and became public laws. Of these, however, only four or five are of broad importance. The others relate to local projects and therefore are mainly of regional rather than national concern.

Of the bills marking special progress, S. 45 undoubtedly ranks first. Introduced early in the 78th Congress by the late Charles L. McNary, passage of this bill last spring signalled the accomplishment of more than ten years of effort on the part of conservation interests to broaden the protection of the nation's forests and related resources from the yearly menace of forest fire. The bill, now Public Law No. 296, amended the Clarke-McNary Act of June 7, 1924 by increasing the authorized annual amount which the federal government may spend in cooperating with states and private owners in protecting forest lands within the respective states. The increase authorized is from \$2,500,000 to \$9,000,000 yearly, the full authorization to be reached during the course of the next three years by appropriations not exceeding \$6,300,000 for 1945, \$7,300,000 for 1946, and \$8,300,000 for 1947, after which the full authorization of \$9,000,000 will be effected.

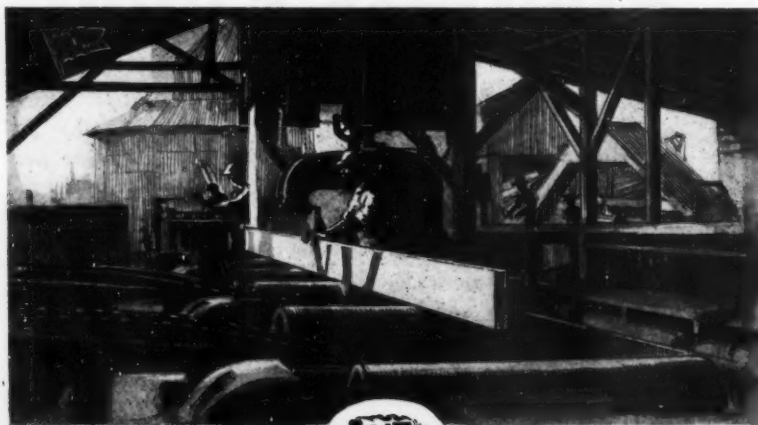
A second bill that promises to have influence in promoting permanent management of private forest lands for continuous crops of timber is S. 250, now Public Law No. 273. This law author-

izes the Secretaries of Agriculture and Interior, individually or jointly, to enter into cooperative agreements with private owners for the sustained yield of forest tracts which embrace both federal and private forest property. The Act will be applicable mainly to those regions where private lands are adjacent or intermixed with federal forests and where economic management calls for cooperation in developing long-time operations.

A third bill of special note was H. R. 3848, now Public Law No. 321. The special significance of this Act is that it gives congressional authorization to the Secretary of Agriculture to complete and keep current the survey of the nation's forest resources which the Forest Service began some fourteen years ago and for which a previous appropriation authorization was near exhaustion. The new legislation authorizes a further expenditure of \$6,500,000 for completion of the survey, which is now about half finished. The expenditure of this overall amount is by yearly authorizations of \$750,000. In addition, \$250,000 is authorized annually to keep forest survey results up-to-date.

Among the more important conservation accomplishments of the 78th Congress, mention should also be made of the so-called Bailey amendment to the new federal revenue bill, which was passed by Congress over the President's veto. This amendment established a new public policy in the taxing of growing timber by basing the tax on capital gains instead of income. Congress adopted the amendment after a showing by forest industry that taxing growing timber on the ordinary income basis when the timber, so taxed, does not become harvestable for years to come is inequitable and a great detriment to the practice of private forestry. The amendment, which was defended against the President's veto of the revenue bill by Senator Barkley, when he resigned his leadership of the Senate in his revolt speech of February 23, 1944, has been heralded by forest industry as "the greatest impetus ever given to good forestry by federal action."

While not a conservation measure in the ordinary sense, passage by Congress of the Surplus Property Act late last summer may have an important bearing on the future management of several million acres of private land which the federal government has acquired during the war for military use and which may be due for disposal when the war is over. It is estimated that such lands aggregate 6,500,000 acres, about one-half of which are valuable primarily for forests, grazing, wildlife, and other conservation pur-



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poses and will render their greatest public service by appropriate forms of conservation management. The Surplus Property Act lays down a definite procedure in respect to the disposal of all surplus military lands in that it gives priority in the following order: To (1) federal agencies; (2) state agencies; (3) original owners; (4) veterans; and (5) general sales.

The seventy to eighty bills which failed to receive final approval by Congress pertained in varying numbers to the conservation subjects of wildlife, stream pollution, national forests and parks, other public lands and soil conservation. The subject of stream pollution drew into Congress no less than ten bills, with varying provisions for dealing with this involved problem in the field of public lands. A legislative proposal that attracted special attention, particularly in the Northwest, was the so-called O and C measure to transfer administrative authority over some 262,000 acres of unpatented, odd numbered sections in the national forests of eastern Oregon and long administered by the Forest Service as national forests to the O and C Administration of the Interior. As passed by the Senate, the lands would have been left under the administration of the Forest Service but receipts from sale of timber and other products allocated to the counties in accordance with the O and C law of 1937. The House committee reported this bill out on December 1, amended to give the Department of the Interior authority over the lands in question and to direct the Secretaries of Agriculture and Interior to effect as soon as practicable an exchange of national forest and O and C lands that will facilitate administration. The bill was on the House calendar but remained unacted upon when the 78th Congress ended.

The proposal to abolish the Jackson Hole National Monument which President Roosevelt created by Presidential Proclamation March 15, 1943, passed both the House and Senate but was pocket-vetoed by the President.

All bills which failed of passage by the 78th Congress died with that Congress. It is anticipated that a majority of them will be reintroduced in the 79th Congress, which convened January 3.

#### LUMBER PRODUCTION DOWN

Lumber production during the winter months from December to mid-March is expected to be substantially below that of last winter, according to estimates made by members of the Hardwood Lumber Manufacturers and Softwood Loggers and Lumber Manufacturers Industry Advisory Committees at their recent joint meeting. The greatest drop is expected in the Pacific Northwest.

## GARDEN GUIDE

Here is a list of some of the things to be found in the new 1945 Short Guide of Kelsey Nursery Service, 50-J Church St., New York (7), N. Y. Copy free on request (except 25c west of Iowa. Will be ready in late February—but write NOW!

### AZALEAS

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### BLUEBERRIES

**10 New Giant Blueberries**—strong 4-year-olds (bearing age) now 1½ feet high, assorted named varieties, our selection but all good, \$16.00.

### BERRY-TREES

**3 Showy Berry-Trees**—handsome blooms in spring, then a show of bright berries in fall that the birds love. One each 3 to 5 foot transplanted: Mountain Ash, White Flowering Dogwood, Photinia (Xmas Berry)—all 3 for \$4.00.

### EVERGREENS

**Kelsey Berrybush Yew**—dark green evergreen rather dwarf, bushy. Covered with brilliant red berries in autumn. 18 inch B. & B. plant for \$3.25.

**Japanese Yew**—upright "Capitata" form. By the hundred and by the thousand. Smallest size as low as 30c each in large quantities.

**Dwarf Evergreens**—mostly grafted, rare and interesting shapes. Will never grow out of place in foundation plantings.

**37 Ft. Yew Hedge**—set 18 inches apart, 25 Upright Hardy Yew will make 37 feet of insect-free hedge that takes care of itself. Plants now 12 to 15 inches high, twice transplanted, sturdy, \$20.00.

### FLOWERING TREES

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**Rare Dogwood Varieties**—not just the white-flowering, but pink as well. Also Double-flowering (like white roses); also a form with yellow berries that the birds leave on a little longer than ordinary red berries.

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### RHODODENDRONS

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### FRUIT TREES

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**Larger Dwarf Fruits**—They can be pruned, sprayed or picked without ladders. Groups should be selected for proper pollination, and we offer a minimum selection of six: 2 Apples (Wealthy and McIntosh), 2 Pears (Clapp Favorite and Bartlett), 1 Plum (German prune), 1 Peach (Elberta). All 6 are 2-year size, begin to bear a little next fall, for \$22.50.

Older, ready to bear strongly next fall, we have a 5-year old size in all but the peach. We offer five plants: 2 apples, 2 pears and 1 plum as above,—5-year olds—for \$46.00. You may add additional varieties to the above collections, which take care of all basic pollinating at the rate of \$3.75 for each extra 2-yr. or \$9 for each extra 5-year-old.

### GROUND COVERS

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**EAGLES MERE AND THE SULLIVAN HIGHLANDS**, by J. Horace McFarland and Robert B. MacFarland. Published by J. Horace McFarland Company, Harrisburg, Pennsylvania. 164 pages, illustrated. Price \$3.75.

Some eight years ago The American Forestry Association held its annual meeting at Eagles Mere Lake in Pennsylvania. Those who attended were surprised to find a lake of sparkling blue water situated on the top of a mountain two thousand feet above the sea. And they were impressed by the scenes of the forest beauty that surrounded it.

Dr. McFarland, the eminent civic leader and rosarian, and his son Robert, in this volume have captured much of the region's beauty and interest for those who have not been fortunate enough to visit the Eagles Mere region. They have done it with seventy photographic reproductions of exceptional quality set in an informative story of the geology and development of the area.

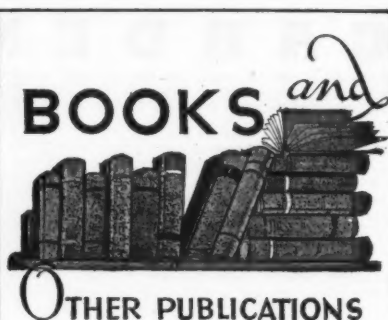
The authors are well qualified for the task of spreading the forestal and other attractions of Eagles Mere. Years of their lives have been spent exploring the highways and by-ways of the country. Their chapter on the forests of the Sullivan Highlands is in itself a conservation lesson in its contrast of the primeval Pennsylvania forest and the destruction that followed in the wake of civilization's exploitation. Happily, the authors tell us "the glory of the new forest is coming" through the conservation efforts of local leaders and the forest department of Pennsylvania.

**THE AZTEC AND MAYA PAPERMAKERS**, by Victor Wolfgang von Hagen. Published by J. J. Augustin, Publishers, New York, N. Y. 120 pages, with 39 additional photographic plates. Price \$6.00.

Here is presented for the first time the story of the origin of papermaking in America. It is an amazingly interesting story dating back to the Mayas of Middle America in the early centuries of the Christian era and carrying on through the civilizations of the Toltecs and the Aztecs.

The art of papermaking originated independently in three areas of the world—China, Egypt and America. Historians have pieced together the history of papermaking by the Chinese and Egyptians but little heretofore has been known of its origin in America. This is at last supplied in "The Aztec and Maya Papermakers," who, we are told, developed their writing materials from the inner bark of wild fig trees.

Mr. von Hagen's book is the result of painstaking research from sources made dim by time and meager by the whole-



A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

sale burning of Indian "books" and records by the Spanish monks of the Cortés conquest. It is not only a distinct contribution to the history of papermaking but it is a fascinating and informative volume, beautifully printed and containing illustrations that help to tell the story of America's first papermakers. The first edition of the book, which is limited, has been selected by the American Institute of Graphic Arts as one of the fifty best books published in 1944.

**THE PRAIRIE CHICKEN IN MISSOURI**, by Charles W. Schwartz. Published by Missouri Conservation Commission, Jefferson City, Missouri. 88 pages, accompanied by 85 photo reproductions. Price \$5.00.

Clearly and simply written, this is a technically accurate account of the life history of the prairie chicken, whose gradual disappearance almost to total extinction symbolizes the tragic results of failure to apply the principles of conservation. Although it is an indictment against those whose early uncontrolled exploitation resulted in but sparse survival of the prairie chicken, it is a tribute to those whose wise management has saved it from total extinction.

For the purpose of stimulating interest and further action toward restoration of this companion of the covered wagon and virgin forests, the author has compiled many intimate facts and has accompanied them with striking full-page photographic reproductions reflecting great care and skill. The action photos are particularly distinctive. In addition to containing valuable information about the characteristics and habits of the prairie chicken, this is downright enjoyable reading.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

**Hemlock—The State Tree of Pennsylvania**, by Henry E. Clepper. Bull. 52, revised, of The Department of Forests and Waters, Harrisburg, Pa.

**Techniques of Fishpond Management**, by Lawrance V. Compton. Soil Cons. Serv. Misc. Pub. No. 528 U.S.D.A. Govt. Ptg. Office, Wash., D. C.

**Use of Ground Water for Irrigation in the South Platte Valley of Colorado**, by W. E. Code. Bull. 483, Colo. Agr. Expt. Sta., Colorado State College, Fort Collins, Colo.

**Poisonous Snakes of the Eastern United States**, by Harry T. Davis and C. S. Brimley. Published by the North Carolina State Museum. Sold by North Carolina Bird Club, Book Fund, Box 2281, Raleigh, N. C. Price 10 cents.

**The Brown Spot Needle Blight of Pine Seedlings**, by Paul V. Siggers. Tech. Bull. No. 870, U. S. Dept. Agr. Supt. of Docs., Wash., D. C.

**Moderate Grazing Pays on California Annual-Type Ranges**, by August L. Hormay. Leaflet No. 239. For. Service, U. S. Dept. Agr. Supt. of Docs., Wash., D. C. Price 5 cents.

**Native Woods for Construction in the Western Pacific Region**, Bureau of Yards and Docks, Navy Department, Washington, D. C.

**The Fireproofing of Timber**. Published by Timber Development Assn., Ltd., 75, Cannon Street, London, E.C. 4, England.

**Thomas Jefferson, Soil Conservationist**, by Hugh H. Bennett. Misc. Pub. No. 548, Soil Conservation Service, U. S. Dept. Agr. Supt. of Docs., Wash., D. C. Price 10 cents.

**Native Trees of Canada**. Published by the Department of Mines and Resources, Ottawa, Ont., Canada. Price 50 cents.

**Report of the Minister of Lands and Forests of the Province of Quebec**. Printed by Redempti Paradis. Dept. of Lands and Forests, Quebec, Can.

**Control of Destructive Mice**, by F. E. Garlough and Donald A. Spencer. Cons. Bull. No. 36, Fish and Wildlife Service, U. S. Dept. of the Int. Supt. of Docs., Wash., D. C.

**The Wolves of Mount McKinley**, by Adolph Murie. Nat. Park Service, Dept. of the Int. Supt. of Docs., Wash., D. C. Price 40 cents.

**Decay of Logging Slash in the Northeast**, by Perley Spaulding and J. S. Hansbrough. Tech. Bull. No. 876. Div. of Plant Pathology, U. S. Dept. Agr. Supt. of Docs., Wash., D. C. Price 10 cents.

## Australia

(From page 36)

fought their way back onto that island, great quantities of native timbers were used in building docks, warehouses, bridges and the like. New Guinea has much fine timber, but it also has insects and fungus that will destroy apparently sturdy pilings and building frames in two or three months. In order that army engineers could select the best trees to cut for each job, guides were made up classifying the timber in such form that with a little practice accurate identifications could be made by men totally unfamiliar with the tropics. The guides show uses for which each wood is best suited, along with suggestions for increasing the life of some by chemical treatment.

Lumber is still a critical material "Down Under," but the supply is improving each month. The bush worker has shown the logging world that he has the stuff to come back after what seemed a knockout blow and win the decision. He and the technical agencies working with him don't plan to stop when the war is won either. Australia is planning to grow more of her own softwoods. Already 250,000 acres of plantations are producing an appreciable supply of pine, Douglasfir and California redwoods.

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These "tree farms" will be greatly expanded, while postwar extension to wartime access roads will reduce the fire danger and make available huge tracts of forests heretofore inaccessible. The country hopes it never again will face the task it did in the first years of this war.

What will this accelerated home production mean to American lumber export after the war? Probably very little. Australia is an under-populated continent and there is much to indicate that she is due for a postwar immigration boom, so it seems very unlikely that timber production will meet the demands of the flourishing young country for many years to come.

## The Forest Exchange

(From page 4)

administer. In other words, were we to receive the full appropriations as outlined, our postwar construction would of necessity be at a rate smaller than in the prewar years.

In contrast to our requests for the above amounts to be included as authorizations of appropriations in the Federal Aid Highway Act, all other agencies greatly increased their requests. For instance the Forest Service, which in the last Federal Aid Highway Act (1940) had authorizations for \$7,000,000 per year for forest highways, and \$3,000,000 per year for forest development roads and trails, this year requested annual authorizations of \$50,000,000 and \$25,000,000 respectively. Action by the Congressional Committees was to recommend one-half of the amounts requested

Watching the coastal mountains as our ship steamed out through Bass Strait and into the Coral Sea, it was difficult to realize that they were part of a strange continent, 7,000 miles from the Columbia River Basin. The foresters I had met—Gay and Lawrence, Allan Gordon and H. D. Roberts of the Forest Products Laboratory and many others—might have been from an adjoining state back home. Our interests and outlook were the same. I wondered if down in those undeveloped forests there might not be an attractive future for a few young Americans who have come hard up against the Pacific Ocean and still yearn to go West to new lands, as their fathers did.

by the various agencies. As a result, our outlook for appropriations in the first three postwar years is at only one-half our prewar rate, while the Forest Service could receive road appropriations nearly four times those of 1940. This is all right with us, of course. I just wanted to emphasize how relatively conservative we are.

The rest of our program, that of \$4,000,000 per year for physical improvements, is one sorely needed. For a decade prior to the war, our construction of this type was largely limited to projects which the CCC and WPA could build. Thus, while we made good progress on campground development, fireplaces, small comfort stations, and truck trails, we got farther and farther behind on employee housing, fire resistant warehouses and utility buildings, and adequate sewer, water, electric and communications systems. Now we are faced with obsolete facilities in most of the older park areas, and with the necessity of providing all required facilities from scratch in many newer areas, including the large Big Bend National Park.

To return to our roads and trails work, we have not commenced the construction of a road into a new area since 1930. We expect to be very conservative in the planning of new roads. Our program is aimed at reconstruction of roads already in existence, and with providing surfacing and bridges on projects now in an incomplete or unsatisfactory stage.

The \$11,000,000 mentioned in your editorial as required for refurbishing old facilities is not an amount in addition to the annual need of \$21,500,000, but is that portion of the first year's work which could be commenced quickly from plans now complete, or nearly complete, if we are called upon to help provide worthwhile postwar employment

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This is the program of an agency which administers more than 20,000,000 acres of lands, and which handles as many as 21,000,000 visitors per year. The cost to the taxpayer would be little, since the national park areas return a substantial part of their costs in direct fees and licenses. Also, because they are mostly remote from large centers of

population, the national park areas contribute greatly to the federal and state incomes from gasoline taxes.

At this time our outlook, because of the cutting of all requests for authorizations for appropriations under the Federal Aid Highway Act in half, is for appropriations far less than our minimum needs.—*Newton B. Drury*, Director, National Park Service, Chicago, Illinois.

### Boy Builders

(From page 29)

here was a tough nut to crack but he would try it. He found a home for the boy and got him started in a Boy Builder class. He took hold immediately and by the time he was sixteen was well known in the town as a craftsman.

Officially, Mr. Hughson is field man

for the State Building Congress. Actually, he is the State Building Congress, always in session, without holidays and without salary.

"And I'm going to stay with the idea as long as I'm able," this eighty-year-old boy builder will tell you.

### Three Forks

(From page 25)

Mr. Alexander's final question is whether the results from any research projects from this region have yet been published. If a negative answer were necessary, it would in no way invalidate the policy of saving this region, as any man of Mr. Alexander's perspicacity must know. In view of the almost universal encroachment on and destruction of natural conditions, the few remaining relics of primeval vegetation and their associated animal life are of rapidly increasing value and complete irreplaceability. Eventually, when the war is over, researchers will resume their work with increased intensity in the Smokies.

The policies of the park have already paid dividends. We at the University of Tennessee and scores of botanists and zoologists from all over the United States (and in some cases from foreign countries) have already published more than a hundred contributions to science based wholly or partly on the great Smoky Mountains. Among them are several which deal with the large research areas, and in part with the Three Forks portion—for example, a bulletin by the writer, on the Tertiary character of the cove hardwood forests, published by the Torrey Botany Club in 1943, and notes on the distribution of native speckled and rainbow trout in the streams of the park, by Willis King, published by the Tennessee Academy of Science in 1937. Whether any paper as yet published treats exclusively of Three Forks is a little beside the point of its potential value for research.

Finally, something should be said concerning why some of the research areas should consist of several thousand acres. Mr. Alexander, who is a technical forester, must be familiar with the com-

plexity of vegetational types in the Southern Appalachians, and know that a fair representation of the forest type groups and site types as they vary with altitude and exposure is not to be found on a small area. Furthermore, the development of areas and population units for many mammals and birds can be completely natural only with adequate space. The acreages of the individual research areas in all the parks were determined in the light of the best advice by wildlife technicians, ecologists, and other scientists together with a consideration by the park administrators of watersheds, pre-existing road and trail patterns, and other features affecting administration.

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## THE FOREST RESOURCE APPRAISAL

TO PROVIDE A BASIS for informed postwar handling of one of the country's most important resources, The American Forestry Association is undertaking a fact-finding survey to determine what effect the war is having upon the country's forests and forest lands.

The project is a cooperative undertaking in which all interested individuals are invited to join. Its objective is to have available down-to-the-minute facts as to the forest situation, upon which public and industrial policies of forest conservation, management and land economy can be based.

Public-spirited citizens, and organizations alert to the need of forest conservation have made the survey possible by underwriting more than four-fifths of its estimated cost of \$250,000. The Association is now engaged in raising the balance.

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### THE AMERICAN FORESTRY ASSOCIATION

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## Seeley Lake

(From page 21)

this fungus are very common. Some of the trees have dead tops, probably from the action of a parasitic mistletoe, but in spite of such enemies slowly sapping their vigor, there is every prospect that the forest, if protected from the ravages of man, will continue for many centuries without much change in appearance.

The great age of this stand of larch is probably due to its fortunate protection from fire by natural barriers, the lake on the east, and on the west a wet meadow and the wide Clearwater River.

The timbered flats show evidence of having survived many ground fires, but the natural barriers have checked and tamed the conflagrations which have periodically ravaged the surrounding hills, and fortunately saved the Seeley Lake tamaracks through the centuries.

## Forest Appraisal

(From page 20)

in eight. Possibly the most significant accomplishment has been to convince a considerable number of state and federal officers and private forest owners that this appraisal has but one objective, to do a fearless job in the most businesslike way that common sense may devise, and that the organization is capable of doing it.

Many organizational difficulties have been overcome. These include the establishment of satisfactory relations with military authorities, ration boards, sources of aerial photographs, and innumerable federal and state agencies having interest in or jurisdiction over forest lands or responsibility for keeping records affecting such lands. In plainer words, the Appraisal had to earn recognition as a trustworthy and useful agency. A large task lies ahead but the staff faces it with enthusiasm and know-how gained by actual experience.

### CREDIT FOR PHOTOGRAPHS

Credit for photographs appearing in this issue is acknowledged as follows:

AAA Photo Laboratory, page 18.  
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U. S. Dept. of Agriculture, page 19.  
Australian News and Information Bureau, pages 8, 9, 10, 11 and 12.  
Cain, S. A., pages 22, 23 and 25.  
Douglas Fir Plywood Association, pages 28 and 29.  
Forest Service, U. S. D. A., pages 20 (lower) and 38.  
Harris & Ewing, page 2.  
National Park Service, page 24.

## WHO'S WHO

Among the Authors in this Issue

GEORGE M. HENDERSON (*Australia's Timber War*) is on military furlough from a civil service position as fire control assistant on the Mount Hood National Forest in Oregon. He was formerly on the staff of the *Portland Journal*, doing special outdoor stories. Mr. Henderson has been in the Merchant Marine for eighteen months, first as deck seaman and now as radio officer.

ARTHUR H. CARHART (*Killing Deer by Kindness*), widely known author and one of the pioneer recreation engineers of the Forest Service, writes from his home in Denver, Colorado. From 1938 to 1943 he was State Coordinator in Colorado of an outstanding program, the Federal Aid in Wildlife Restoration. Since last spring he has been serving the Government in OPA's Information Department as regional executive, heading up six Western states.

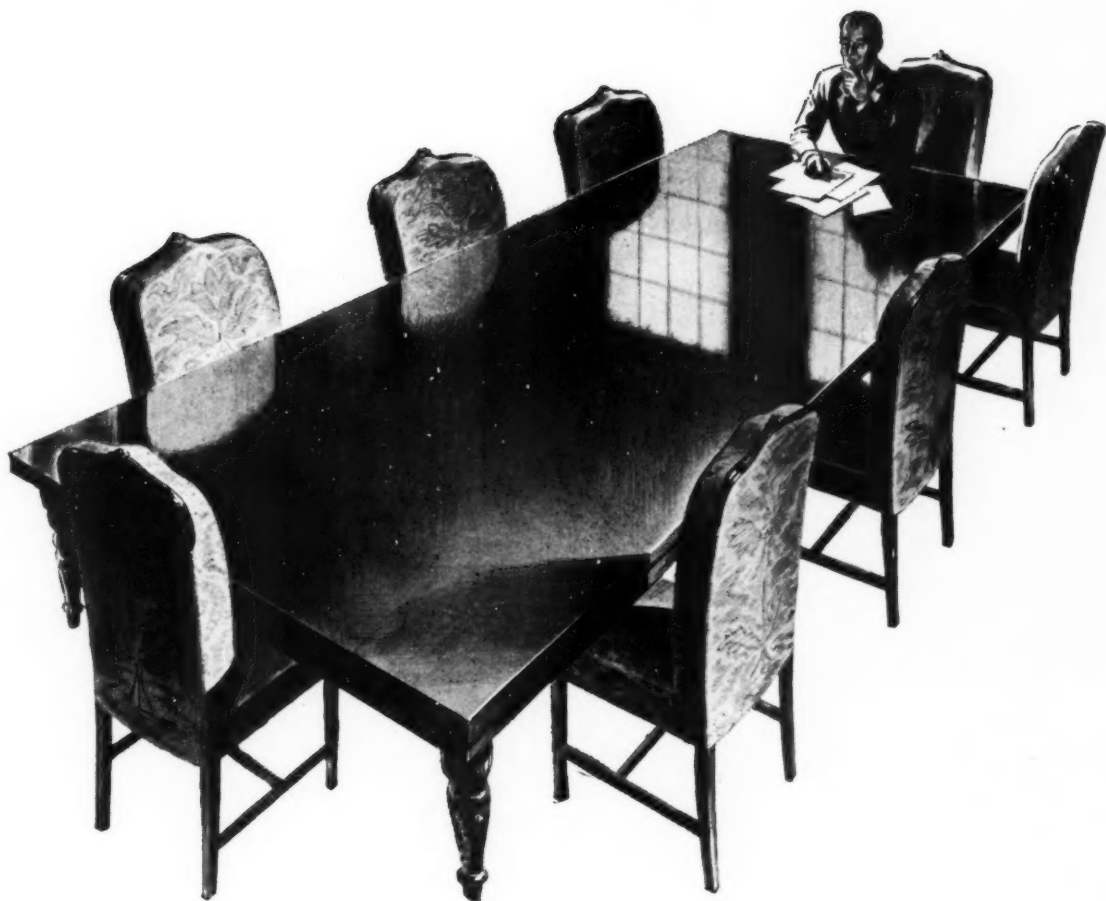
LOUISE AND STANLEY CAIN (*More About Three Forks*). Mrs. Cain is a Mt. Holyoke graduate and took her master's degree at the University of Tennessee. She has published technical papers in the field of micropaleontology (pollen analysis) with her husband, Stanley A. Cain, who is professor of botany at Tennessee and holds doctor's degrees from Butler and the University of Chicago.

JOHN B. WOODS (*One Year of the Forest Appraisal*), internationally known forester, formerly of Portland, Oregon, is directing the work of the Forest Resource Appraisal now being conducted by The American Forestry Association.

ELERS KOCH (*The Seeley Lakes Tamaracks*), pioneer forester, writes from his home at Missoula, Montana. After over forty years with the Forest Service, Mr. Koch recently retired from active work. Much of his writing now is done from his summer home in the heart of the tamarack forest he tells of here.

GEORGE D. ROBEY (*Muskingum Plans For Peace*), a free-lance writer for outdoor magazines, native of Ohio, is outdoor editor of the *Columbus Citizen* of the Scripps-Howard chain.

HAROLD OLSON (*Boy Builders*) is Western manager of American Forest Products, Inc., with headquarters at Portland, Oregon. He covers for the industry the Douglasfir and Western pine regions of eleven states. Formerly editor of the *Aberdeen World*, Mr. Olson is a veteran of World War I.



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